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Nos. 22137 - 23144

Sept. 24, 1944 - Feb. 19, 1945
Colombia, Ecuador & E.U.S.

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COLOMBIA

Pages

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Collection and Field Note Book

No. 12

Sept. 24, 1944 - Feb. 19, 1945

Nos. 22137-23144

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COLOMBIA

Cundinamarca, plants observed cultivated in Bogota	74
El Valle, plants observed cultivated in Cali	76

PERU

Plants observed cultivated in Lima (not collected	78
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ECUADOR

Plants observed cultivated in Guayaquil	80
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PERU

Plants observed cultivated in Talaca and Chiclayo	81
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Collection and Field Note Book

No. 12 (Cont'd)

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 23014-23113 188-199

Collection and Field Note Book

No. 12 (Cont'd)

PagesCONDOR

Lola, Upper left fork Rio Zamora, trail to
Zamora, Cordillera Zamora, Divide bet. headwaters
left fork of Rio Zamora and Quebrada Jipiro, Cord.
Zamora, main divide of Cordillera Zamora (El Condor)
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Rio San Francisco, Valley of Rio Zamora 25138-25144 200-203

Collection Guillermo Rodriguez

near Monos, Prov. El Oro 202

* * *

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4/28
of
icestic
saw
&
long

F. R. Fosberg
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Embajada de Estados Unidos

y recibir propina

Sept. 24, - Sleepy Hollow,
along Tripps Run, 1 mile
S. of Falls Church, Fairfax Co.
Old fields, ~~and~~ thickets
and bottom lands.

22137 Liquidambar styraciflua
roadside

22138 Liquidambar styraciflua
edge of old field

22139 Liquidambar styraciflua

40 Echinochloa crus-galli
roadside

41 Cyperus
roadside

42 Carya
roadside.

tree 10 m. tall ~~in roadside~~,
corkiness extreme but
corkless twigs found
on same tree.

tree 20 m. tall, spreading,
trunk ~~20~~ 1 m. thick,
no corky ridges seen
on ~~trunk~~ twigs.

mass collection taken to
show variation between
extremes of corkiness
represented by #22137 & #22138
twigs of 2 season old wood
taken on lower branches
of south side of tree
where at least some
sun reaches it. Leaves
of small type characteristic
of dwarf branchlets in 2 season
wood. In each case the
twig is the one most corky
on casual observation.
Trees all 5 m. tall or more.

tree 8 m. tall, fruit green,
globose, buds not golden.

- 27143 *Cirsium discolor* (Muhl.) Spreng.
~~scattered~~ old field with
 scattered brush
- 44 *Aster*
 very abundant in old
 field
- 45 *Lespedeza*
 common in old field
- 46 *Botrychium dissectum* var. *obliquum* (Muhl.) Clute
 rare in old field (one seen)
- 47 *Crotalaria sagittalis* L.
 common locally in old field
- 48 *Lechea*
 rare in old field
- 49 *Nyssa sylvatica*
 fence-row
- 50 *Euphorbia*
 abundant on road embankment
- 51 *Erigeron*
 road embankment
- 52 *Commelina*
 along stream in pasture
- 53 *Ulmus americana* L.
~~roadside~~ roadside thicket
- ✓ Oct. 1 - Trupper Run, 1 mi. s. of
 Falls Church, Fairfax Co. Va.
 pasture near stream
- 54 *Crataegus*
- 55 *Paronychia*
 base of great granite rocks
 on rocky knoll in pasture
- 56 *Polygonum*
 same.

herb 1 m. tall, fls. purple.

rays white, disk yellow
 turning maroon.

prostrate, fl. pale pink
 with deeper center to banner

fl. yellow.

young tree 6 m. tall, fruits
 black, fleshy.
 lactiferous

rays white, disk greenish-yellow

upper petals large, ^{bright} blue,
 lower one small, white.

small tree 9 m. tall
 fruits dull red.

fls. white

22157 *Paronychia*
same

58 *Euphorbia*

Oct. 29 - Santanderito (Santander),
Rio Bogotá below Tequendama
Falls, Cund. 1500 m.

59
cultivated on rock wall

Nov. 1 - Mouth of San Francisco
Canyon, ^{lower slopes} of Guadalupe
Peak, Bogotá, Cund.

2700-2800 m.

open
sparse, planted forest
of *Eucalyptus globulus*
on steep rocky slopes.

L₁ 60 *Alchemilla*

scattered, common locally
L₂ 61 *Blechnum*
scarce, local

L₁ 62
common

L₁ 63 *Galium*
scarce

L₃ 64 *Cathartes*
common,

L₁ 65
occasional, shaded by bush

L₁ 66
common on more open ledges

67 *Bulbostylis*
occasional on ledges

prostrate

vine, inflorescences
erect, buds deep red,
flowers cream-white.

Most of understorey dominated
by *Eccelesia coarctata*, with
Centropogon (?) sp.

spawling

leaves stiff-chartaceous

very small tufts.

prostrate from threadlike
rootstocks.

loosely carpeting soil

fls. bright yellow.

tufts with most of
leaves + culms dead.

L 22168

common

L 69

occasional

L 70

scarce

L 71

scarce

L 72

*Paspalum*very scarce, around edges
of rocks

L 73

scarce, in clump of bushes

L 74

occasional

L 75

common in open places

L 76

Pteridium aquilinum (L.) Kuhn. var.
very common

L 77

rare, in sheltered places

L 78

common on ledges

L 79

common on vertical banks

L 80

common on edges of ledges

L 81

Polypodium
ledges*Cundinamarca*

small tufts

small tufts

small dense tufts

spikes red

~~in~~vine, tangled in
bushes, fls. white,
~~plant~~ latex exudes
from broken places.large dense spreading
clumps, inf. faintly
lavender when
young.fronds stiff, coriaceous,
often 1.5 m. tall and
correspondingly complex.
thick mats ~~in~~

cushions

mat-forming

thick cushions, plants
bright pale green, starlike.

✓ Nov. 7 - Rio de Páez, 12 km.

s. of Páez

in and at foot of 8000 ft.

face slope of tilted sandstone.

L. 77182 *Dalea*
common on slopes of rocky
soil

L. 83 *Tillandsia*
on trunks and branches of
small trees.

L. 84 *Setaria*
in soil at base of slope

L. 85 *Dodonaea viscosa*
commonest shrub on dry slopes

L. 86 *Gnaphalium*
common on rocky soil foot of slope

L. 87 *Cyperus*
scattered at foot of slope

L. 88 *Notholaena*
common in lower crevices

L. 89 *Drymaria*
local on rocky disturbed
soil at foot of slope

L. 90 *Yucca*

L. 91 *Yucca*
rare in soil at foot of slope

L. 92 *Yucca*
common in soil at foot of slope

L. 93 *Yucca*
only one seen, at foot of slope

L. 94 *Yucca*
rock crevices & soil pockets

L. 95 *Sida*
base of slope

scrubby bushes up to 1 m.
tall, fls. blue-violet

tufts

awns purple

shrub 1 m. tall.

small tufts.

tufts

spreading, petals
white, much shorter
than calyx, bifid, lobes
entire.

small tree 5 m. tall
10 cm thick, fls. white.
tufts.

fls. orange-yellow.

- 622196 *Galium*
common in clumps of bushes
at base of slope
- L 97 *Polytrichum*
common in patches on rocks
- L 98
common in crevices
- L 99 *Polypodium*
common in crevices
- 72200 *Andropogon*
common in crevices
- 01 *Cheilanthes*
common in crevices
- 02 *Polypodium*
common in crevices
- 03 *Wassadula*
rare at foot of slope
- 04 *Vernonia*
common on and at foot of slope
- 05 *Delaginella*
common on slope
- 06
on soil at foot of slope
- 07 *Urena*
on bare rocks - upper slope
- 08 *Eragrostis*
by roadside

Nov. 8 - Socha, valley of
Rio Chicamocha 1900-2900 ft

~~low~~ hill of decomposing
sandstone, moderate slopes

- 4 09 *Hypericum*
abundant

erect to prostrate, tangled
in bushes, roots orange,
fls greenish white,
cushions

low tufts

fronds erect, gray.

small tufts

tufts

fronds very erect

erect suffrutescent herb,
- up to 1 m. tall, fls yellow
- shrub up to 0.5 m. tall,
- fls. lavender-purple.
loose mats

glutinous

spreading tufts

cut over land, now mostly
sparse bush resembling
subparamo. little soil remaining.

shrubs up to 1 m. tall,
sparsely branched, fls. orange-yellow,
leaves conspicuously 4-ranked, "chiti".

2710 *Pellaea ternstroemia*
rock crevices

11 *Borreria*
abundant

12 *Bulbozylis*
rare

13 *Vaccinium*
occasional

3 14 *Euphorbia*
common

15 *Polygala*
occasional

16 *Polygala*
occasional

17 *Dichromena*
common

18 *Evolvulus*
occasional

3 19 *Borreria*
~~occasional~~ common

small tufts

usually erect, fls
white, not pilose within.
small tuft

depressed, spreading
stiff, bushes, 1-3 dm.
high, fls pink, fruit blue.
prostrate, stems red,
grasses white to pink.
this and 2722 look the
same except in stature
and the fact that in
this the flowers are
purplish white to
purplish pink. Roots
have faint wintergreen
odor.

this and 2723 look the
same except in stature
and the fact that the
flowers are white,
only the youngest buds
having a trace of pink.
Roots have faint wintergreen
odor.

small tufts, bracts
white at base, spikelets
white

prostrate, fls. about 1 cm.
across, bright blue
prostrate or ascending,
fls white, purplish without,
pilose within.

22210

occasional on disturbed top of hill.

same but various habitats

21 *Prunus*

growing in yard

22 *Berberis*

talus below road on steep, bushy slope

23 *Duranta*

talus below road on sparsely bushy slope.

24 *Salix humboldtii*
edge of field25 *Bonania*
edge of marsh26 *Bonania*
talus below road27 *Juncus bogotensis*
scops and marshfls yellow, involucre
bracts narrow distally
and marginallytree 5 m tall, fls white,
fruit immature
rounded bush 2 m tall,
leaves white beneath,
upper fruit ~~fls~~ blue.
~~tree~~ rigidly branched
bush 2 m tall, leaves
dark green, fls white,
fragrant, tube curved.
fruit immature- *Asimina speciosa*
this form grows very
tall and erect with a
habit like Lombardy
poplar, but with the
soft tips of the branches
drooping. trunk
white until 100 cm. in
diam. with large
triangular branch scars.
prostrate, forming an
extensive mat. fls
white, not pilose
within, anthers black.
prostrate, forming a
mat from central root.
fls. white, pilose within
purplish without.
clumps - mass collection
taken from different clumps, dried early.

Nov. 10 - Buenavista, headwaters
of Rio Paulo bet. Guacharo Laja (9. Colorado)
and Rio Paulo, 30 km. s.e. of Laja. 3200-3300 ft.

Cloud-forest, steep slopes

22223 *Cinchona officinalis* L.

29 *Cybianthus samifolius* (May) Agostini ^{det. J. Agostini}

30 *Cinchona officinalis* L. ¹⁷⁹¹ 9000

L 31

along trail

32 *Nertera granadensis*
along trail

233 *Nertera granadensis*
along trail, exposed place

34 *Sphagnum*
on earth banks, along
trail on ridge.

35 *Polytrichum*
vertical earth banks

~~sample~~ *B. lat. var. lat.*

36 *Cinchona officinalis* L.

from tree harvested several
weeks ago.

shrub 2 m. tall,
sapling 4 m. tall,
2 cm. thick, stipules
turning reddish. (bark sample)
scrambling shrub,
leaves green, fls. red in
upper half, lower half,
leaves pink, anthers
bluish, column whitish
(from several plants)

prostrate, fls. yellowish
green, fruit scarlet.
prostrate forming a
mat fls. yellow green,
fruit scarlet.
~~leaves~~ soft cushions.
bright rose color
(not fruit)
forming sparse
cushions.

sapling 4 m. tall, 2 cm. thick
near base, midrib becomes
reddish when old, network
of veins conspicuous, (bark sample)
denticulate impressed above.

same data for small rocky
peak with bushy
subparamo-like vegetation
22237 *Vaccinium*
common around upper
edges of forest

38 *Vaccinium*
common

39
not yet seen, in deep ~~the~~ forest -
billed tremors

40
on ericaceous shrub # 22237

41 *Hetera grandensis*
on earth & air

42 *Parpalanthus*
common on rocky slopes
and ledges

43 *Epiphyllum*
common on vines

44 *Weinmannia*
common

45
common

46
common

shrub up to 0.5 m. tall,
fls. pink, especially
at mouth, fruit translucent
white.

tiny erect shrub, fls. red, fruit
translucent white.
erect, fls. bronze, red

bronz green fruit translucent
white.

prostrate, fls. yellowish
green, fruit scarlet.
single or slightly,
caespitose fls. white
with blackish involucres
cushions, rose colored

shrub, somewhat
spreading, 2 m. tall,
fls. ~~white~~ with red
calyx, white filaments,
pinkish anthers, somewhat
fruit red, leaves strongly
revolute.

forming tangles on
ground and by small
shrubs dark maroon
bronz.

tangles shrub up to 0.5 m.
tall, petals white, stamens
rose pink.

222.47

C. 222.47

48

48

49

50

51

52

common around bases of
shrubs

53

Hedyotis ciliolata
common

54

same. low forest

Bryum

earth bank, in mat of hepatics

55

Bryum

earth bank, in mat of hepatics

56

earth bank

57

earth bank

shrub 1-2 m. tall, fls.
pale greenish, fruit black,
when ripe, leaf base
with reddish margins,
old leaves red, 1 flower
& fruits from different plants
they shrub up to 2 m. tall,
fruit red.

shrub up to 1 m. fls.
scarlet.

thick cushions, golden-green,
shrub 2 m. tall, green to
yellow-green, when
open, exposing scarlet
seeds attached apically
to axils, placenta.
leaf soft cushions,
gold-green.

small shrubs, up to
0.4 m. tall, leaves 4-ranked,
fls. white, purplish
without (terminal
or racemously arranged
branchlets) leaves whitish
beneath, thick.

cushions

leaf soft cushions.

22258

base of tree

59. *Hymenophyllum*
in crevices of tree60. *Hyssopus*
mud near spring61. *Cuscuta*
mossy tree trunk62. *Liabum*
near clearingNov 9. Guadalupe, Rio Gomez (Rio
Arabispo?), 10 km. s. of Docha, 10000'
no doubt as to63. *Catharinaea*64. *Bryum argenteum*Nov. 11 - "Las Mesas", headwaters
of Rio Panto, bet. Guadalupe Laja
(of Colorado) and Rio Panto, 25 km.
s. of e. of Docha.open paramo grassland,
very wet and marshy
in spots, with scattered
bushes and patches of bush
or bushy forest.65. *Aragoa*
common66. *Senecio*
common67. *Senecio*
bushy slope

mat-forming

pendent

s. of milky, fl. yellow

shrub 1-2 m. tall,
fls. white, fragrant,
shrub 1-2 m. tall,
fls. yellow, leaves
green
shrub 1 m. tall, leaves
terete, glaucous, fl. yellow.

- 72268 *Geranium*
occasional, brush, slope
- 69 *Hypericum*
common, bushy slope
- 70 *Hedyotis mutica*
common, bushy slope
and open places
- 71 *Hedyotis nitida*
common, bushy slope

Nov. 11 - Extreme headwaters
of Rio Panto, near divide,
Paramo de Laja (El Penco)
18 km. s.e. of Socha

- L.1 72 open rocky paramo.
Lobelia terna
earth banks, common
- 73
common
- 74
spreading on flat rocks
- 75 *Hedyotis nitida*
occasional
- 76
rare here
- 77 *Carex*
one colony seen here
in damp flat place
- 78 *Chusquea weberbaueri*
common

- fls. pink, leaves
turning red when old.
fls. yellow "chito"
- ~~leaves~~ prostrate, leaves
4 ranked, bud purple,
fls. white inside.
shrub up to 0.4 m. tall,
lvs. white beneath, fl. white.
~~fruits yellow~~ "paja"
- fls. blue-violet
- forming dense cushions.
lvs. gray-green, fls. white.
carpets, thinner toward
edges, closely adhering,
grayish green.
- shrub 0.4 m. tall
lvs. white beneath,
fls. white, purplish without
tufts, infl. purple.
- isolated culms or
slightly caespitose,
heads drooping.
- ragged bunches, varying
greatly in size, occasional
bunches flowering.

- 22279

- 80 ^{common} *Bartsia*
 81 ^{common} *Luzula*
 common in rock crevices

Nov. 11 - (Rio Arobis) Rio Fomezo,
 above Guabadas,
 10 km. e. of Locha

- sub-paramo brush in
 canyon
 82 *Vaccinium*
 common
 83 *Pernettya*
 84 *Baccharis*
 85 *Senecio*
 86 *Seneciotheca argentea* (Mutis) Raf.
 common
 87 *Senecio* (gyrogyne)
 common
 88 *Weinmannia*
 occasional
 89 *Vicia*
 rare
 90 *Calceolaria hirtiflora* Pennell det. Wundtke
 common locally

isolated plants, rosettes,
 gray, fls. white.
 heads bright deep purple
 heads pendent
 tufts small

bushes 1-2 m. tall, leaves
 stiff, flowers crimson,
 berries blue, but no
 - mature ones seen.
 bush 1 m. tall, leaves
 reticulate beneath,
 fls. white.
 shrub 1.5 m. tall, heads
 whitish.
 shrub 2 m. tall, lvs.
 - green, fls. yellow.
 silvery bushes, 2 m. tall.
 bushes 2-3 m. tall,
 fls. yellow, rays present
 - but not large.
 small tree 4 m. tall
 climbing in bushes
 to 2 m., fls. blue
 - weals shrub up to 2.9 m. tall,
 in bush, fls. bright yellow

22291 *Vallea stipularis*

92

93 *Baccharis*
commonNov. 11 slope south of
Rio Gomeza, ~~at~~ (Rio Gomeza)
~~and Rio Gomeza~~ 7 m. h. e.
of Luchacleared rocky slope
with bushy ravines
and scattered bushes.94 *Mutisia*
occasional95 *Galium hypocarpum*
occasional, rocky slope,
foot of great boulders.96 *Borreria*
occasional, foot of great
boulders97 *Phytolacca*
roadside

98

rare, foot of great boulders

tree 5 m. tall, fruit green,
fleshy, pericarp thick,
blunt, shorter than wide.
herb 1.5 m. tall, fls. white,
herbage aromatic.
shrub 2 m. tall,
fls. whitishvine climbing over
large shrub, heads
pendent, rays scarlet,
head somewhat zygomorphic.prostrate, fruits
fleshy, orange.prostrate, fls. white,
pilose wither.depressed, much-
branched succulent
herb, fls. pink. fruit
not quite mature
erect suffrutescent
herb, 1-1.5 m. tall, rays
white.

- 22299 *Elaphoglossum*
crevices of great boulders
- 22300 *Asplenium*
rock ledge, rare
- 01
vertical rock face
- 02 *Polypodium*
vertical face of boulder,
also ledges
- 03
crevices in great boulders
with clumps of orchids.
- 04 *Polypodium*
rock ledge, with #22305
- 05 *Polypodium*
rock ledge, with #22304
- 5 06
roadside
- 1
Nov 11 - ~~side of~~ ^{side of} Valley of Rio
Jomeya, 6 km. e. of Locha
- 3 07 *Tagetes*
common roadside weed
- 4 08 *Polymnia*
near habitations
- 10 09 *Bocconia*
rocky bank above stream

erect, fronds coriaceous

gray

fronds not - erect, not
as stiff or thick as #22300.
fronds erect, stiffer
and thicker than #22304.
rounded shrub 2 m. tall.

herb 1 m. tall, very
strong odor but not
quite so unpleasant
as in most *Tagetes* species.
fls. bright yellow.
- this is giant herb, 5 m.
tall, 10 cm. thick near base.
shrub 2.5 m. tall,
leaves gray-green,
whiter beneath,
inflorescences pendent,
fruit not quite mature,
orange latex oozing slowly.

22310 *Alnus*

bush above stream, minor

4 11

~~at the stream~~ bush above streamNov. 11 - Road beyond Doña
valley of Rio Gómez, BoyacáAn interesting series of
sandstone cliffs
bet. 9000' & 10000' alt.along this road are the
habitat of literally tens of
thousands of specimens
of 2 species of bromeliads -
an *Aechmea* and a
Puya. The *Aechmea*Nov. 12 - lower hills
above Sabana de Bogotá just
north of Usaquén, where
the La Calera Cableway crosses
highway, Cundinamarca
subparamo bush 8700-9000'

12

Palicourea

flat ridge-top

with
W.B. Drew*Coryaca* - Cundinamarca 37tree 6 m tall, leaves
mostly damaged.bush 2 m., fls. pink,
fruit black, stamens
with filaments
apparently fused in
a ring toward base.is solitary, the vase-like
rosettes erect, plastered
against the bare sandstone
wall, without the support
even of a crevice. The
Puya is caespitose as
usual. On broken
boulders from the cliffs
are great clumps of orchids,
of several genera but
principally one with very
thick leaves. Several ferns
also occur here.A secondary sub-paramo
vegetation almost regaining
forest conditions, but with
soil mostly eroded
off.shrub 2 m. tall, buds
yellow-green, turning white
as flowers open, flowers
then turning dull purple,
infl. pendent, yellow.
fruit green.

22313

eroded tree-trail, in natural soil

14 Myrsine
slope15
slope16
slope17
in trail, rare18 Clusia
flat ridge top19 Clusia
flat ridge top20 Andropogon
flat ridge top21 Lleria
flat ridge top22 Lyrilax
flat ridge top23 Palicourea
flat ridge top24
flat ridge top25 Diplazium
abundant on slopes26 Morina
occasional on slope

prostrate

small tree, 4 m. tall,
fruit black.very slender, scarcely
branched shrub, 2 m. tall,
fruit black.straggling shrub 1 m.
tall. fls. white, stamens
rose purple. fruit white,
fleshy.

fls. white, very zygomorphic

shrub 2 m. tall,
exuding aromatic yellow
latex when broken,
fls. greenish. ♂small tree 6 m. tall,
exuding aromatic yellow
latex when broken.
~~erect~~ erect branchesshrub 1.5 m. tall,
infl. dull pink, pendent.
tough vine climbing
over bushes. fls. greenish white.
bush 2 m. tall, infls.
and fls. deep bright
red-purple.stiff bush 2 m. tall,
fls. pinkish white fruit green
shrub 2 m. tall,rays white.
shrub 1.5 m. tall,
fls. indigo purple

27327 *Gaultheria*
slopes

28 *Hedyotis nitida*
slopes

29 *Viburnum*
slopes

30 *Palicourea*
flat top of ridge, common

Nov. 22 - Guindis Pass,
west slope, highway
above Calarcá, Caldas
cleared slope with 2700 m.
scattered trees, mostly
Quercus humboldtii

31 *Quercus humboldtii*

32 *Cinchona pubescens*
1 tree seen, sprouts of others

33
one tree seen

Nov. 23 - Pescadero, 10 km. from Maribato, Cauca
sterile, eroded plateau of red sandstone
34 *Ladenbergia magnifolia*
abundant in ravines

Cundinamarca - ⁴¹Calarcá

shrub 0.7 m. tall, fruits
mostly tinged with purple,
fleshy.

- shrub 0.3-1 m. tall,
leaves white beneath,
fls. white, purplish
outside.

- shrub 3 m. tall with
long branches, abundant
clusters of blue fruits.
fls. white.

- shrub 0.6 m. tall,
fls. white, fruit
orange-yellow.

- tree 10 m. tall.

tree 4 m. tall, 10 cm. thick,
sterile, leaf veins becoming
reddish, old leaves bright
red, stipules somewhat
recurved, terminal bud
glutinous. (bark sample)

- tree 5 m. tall, fls. green,
ribs of fruit purple (as
in *Solanum mitorhiza*),
enlarged calyx yellow.

tree 5 m. tall, others much
larger (red sample)

Nov 24 Finca of Enaigu
Mosquera. Dec 4 of
Papa ya.

Mosquera has a fair sized finca of rolling plateau land, with several streams. The soil seems to be rather acid, judging from the vegetation. It has a black surface layer that must be fairly good. The forest patches that remain are largely Weinmannia of 2 species, Vismia sp., Miconia of at least 2 sp. Some Cinchona pubescens, Palicourea, etc.

The ~~the~~ F.L.G. Cinchona nursery is here, as well as a small plantation of Ledgeriana hybrid Cinchona sent by B.Y. Morrison to Mosquera.

The latter, 1800 seedlings were mistreated sadly at first, when I saw them in Oct. 1943, they were scarcely surviving. Bill Davis suggested removing the ball of sphagnum from the roots, which was done.

The plants are now

from 3 to 8 dm. tall, with hard woody stems and healthy firm leaves. They do not seem to be too fast-growing. They have all been pruned to a single stem. They look quite variable, and obviously have a certain amount of C. pubescens in their predominantly C. officinalis ancestry.

Mosquera has transplanted them all into a ravine with sides with about 25-30° slopes. They are planted in holes 1 m. square and 1 m. deep, filled 70 cm. with green vegetable matter and 30 cm. with top soil, then allowed to stand 3 months before planting.

At present the plants are in open sun, but M. has planted bananas between them for shade, but they are only starting to grow. He will later plant Bixa orellana. The plants are spaced at least 4 m. apart.

Nov 24 - Finca of E. Mosquera,
1 km. -

n. of Popayan. Cauca 5700 ft.
thin second growth woods
on acid soil, rolling
plateau.

22335 Weinmannia
common

36

one tree seen

The holes don't seem
to be collecting standing
water, probably because
the subsoil is porous.

He has taken all the
branches pruned off the
plants and stuck them
in the soil to root. A
fair percentage have
taken hold.

The F.L.A. ~~nursery~~
established by P. S. Coffin,
occupies a piece of ground
about 100 m. by 35 m. (about
1/3 hectare). For this is paid
a rental of 100 pesos a month.
Land in the vicinity
worth about 100 to 150 pesos
a hectare.

There are 27 beds, ~~12~~
1 m. wide, 12 of them 25 m.
long, the others 27 m. long.

tree 5 m. tall, 7 cm. thick,
leaves dark green above,
pale below.

spreading tree, 6 m. tall
fls. ^{green} in pendant panicles
from larger branches.
(fruit said to be red, fleshy,
several cm. in diam.)

They are surrounded
by an 8 inch board,
partially filled with
leafy soil, the rest filled
up in various ways.
They have been ~~planted~~
in various ways and
at varying times. They
are numbered consecutively
and may be briefly described
in order.

Bed # 1) tucumbra, 2 g. seed per sq. m.
planted July 15 - manure,
humus + sphagnum -
dense stand plants up
to 3 cm. tall, healthy.

1.5 g. seed per sq. m.
2) pubescens (local), planted Feb. 10
- local black top soil only -
not one plant per square foot. 3-6 cm. tall

sphagnum
where used,
about 1 cm.
seeded
except
beds 14-16

1944 - Colombia
nursery (etc.)

Bed #3) *Luccimbra* -
planted June 24 - humus, manure
sphagnum - good stand.
plants up to 20 cm. tall.

#4) same but no manure -
plants twice as vigorous

#5) *pitayensis* - 3 g. seed per sq. m.
planted Feb. 24 - humus
+ sphagnum - poor stand.
plants up to 15 cm. tall.
with 6 pairs leaves, some
so young as to have only
2 pairs of leaves. Plants
vigorous, large root
systems.

#6) *Luccimbra*, 2 g. seed per sq. m.
planted June 12 - humus
+ sphagnum - very dense
stand. plants up to 10 cm.
tall with 5 pairs leaves,
very irregular in size.

#7) *pitayensis*
planted March 14 - humus
+ sphagnum - dense, fairly
even stand up to 15 cm.
tall, healthy but rather
spindly plants.

#8) *pitayensis* 3 g. seeds per sq. m.
planted March 14 -
same as #7, but smaller
plants and much poorer stand

#9) *pitayensis* 3 g. seed per sq. m.
planted Mar. 13 -
same as #8 but better
stand, smaller plants.

#10) *pitayensis* 3 g. seed per
sq. m. planted Mar. 10 -
humus only - good
stand, plants healthy
but spindly up to 15 cm. tall

#11) *pitayensis* - 4 g. seed per sq. m.
planted Mar. 29 - humus only
about like #10 but stand
more uneven.

#12) *pitayensis* - same as
#11, plants very uneven,
1-20 cm. tall. ^{planted Mar 31}

#13) *pitayensis* - planted Apr. 3
- poorer, more uneven
stand, plants smaller.

#14) *pitayensis* - 4 g. seed per sq. m.
planted Apr. 8 - humus and
deep layer of sphagnum -
after settling - very poor
stand, small plants 2-4
cm. tall. obviously too much
sphagnum

#15) *pitayensis* - same as
#14. plants healthy,
mostly small, but some
large.

Bed # 16) pitayensis - 6 g seed per sq. m. planted May 6. - about like # 14, poorer stand, smaller plants in most of bed.

17 succinbra - 2 g. seed per sq. m. planted May 23 - humus & sphagnum - very dense stand of plants up to 15 cm. tall, but apparently still germinating. Only one strip of cloth on north side.

18) succinbra - 2 g. seed per sq. m. planted May 24 - humus & sphagnum - very dense stand but plants about 1/3 size as in # 17. 2 strips of cloth, as in all following beds.

19) succinbra planted May 30. same as # 18.

20) succinbra - same as # 18, planted June 14. plants sl. smaller than # 18. 2-5 cm. tall.

21) succinbra - same as # 20. denser but more uneven stand, smaller plants.

22) ~~pitayensis~~ succinbra - same as # 21, but planted June 16.

23-24) ²⁵⁾ succinbra - same as # 22 but less even and less dense stand. humus uneven ^{no sphagnum} # 24 has seedlings & smaller average size.

26) succinbra - planted June 23 - humus screened, no sphagnum. better stand & taller plants than # 23-25.

27) succinbra - planted June 30, same as # 26 but stand very uneven.

Most of the *P. pitayensis* seed comes from between Silvio and Tameyo.

Coffin tried drying seeds in drier at 55°. No germination. Kichi dried them at room temp. till they started to open, then in sun. Gave good but uneven germination even though they were green and soft to start with. No selection was made.

Orientation of seed beds near east and west. The roof about 2 m. high on N. side, 0.4-0.8 m. on S. side. N. side and ends closed with one or 2 strips of cloth 1 yard wide.

Along one end is a bed with about 250 young *Pitayensis* trees 1-6 dm. tall, mostly healthy, transplanted from Quintana. Shaded with a roof of poles & fern leaves, not thick. ~~Open~~ 1.5-2 m. high, sides open.

I don't understand the fact that in all but one bed the stand is poor in the 1 m. at the west end, and in all of them there are few plants ~~at~~ in the 1-2 dm. next to the north (front) edge of the bed.

Dr. John Geib has made an estimate of the no. of plants as follows:

Leucisubra - 517,500
[this is probably somewhat low]

Pitayensis - 114,500
[about right]

Local pubescens - 1500
[much too high]

Pitayensis cuttings 250

Mosquera's *Edger* plants 500-700
[much too high, Kitchi says 250 at most]

14 Nov. 26 - Headwaters of Rio San Francisco, above Purace, north of Volcan Purace, Cauca ~~subparamo~~ 11000' open paramo plateau

22337 *Acaena*

common, even more abundant at lower altitudes

38

occasional in bushy patches

39

Sisyrinchium

occasional on open slopes

40

Cladonia

covering sloping rock

41

Polytrichum

common on open earth bank

34

Nov. 26 - Divide bet Cauca and La Plata drainages, north of Volcan Purace, near Laguna San Rafael, Cauca
Marshy paramo, rather bushy in spots, flat 11200 ft.

42

Vaccinium

occasional

43

common

44

Rumex acetosella L.

abundant in patches

45

Senecio

occasional

low ragged shrub, spines or fruits reddish.

slender erect shrub 2 m. tall. rays violet

tufts, fls. yellow

A small paramo, as far as I could see, rather broken and interspersed with wooded ridges - mostly the flat places open. *Hedyotis* not seen, though looked for.

low bush from a prostrate woody stem 2 cm. thick. fruits blue, sour.

fls. reddish

heads nodding, involucre maroon, rays bright purple "arnica".

32346

at river, edge of ravine

47 *Apium*
common48 *Luzula*
occasional, especially
in ravines49 *Bartsia*
common50 *Nertera granadensis*
common, forming a mat
down between other plants51 *Galium hypocarpium*
common52 *Rubus*
occasional53 *Polypodium*
occasional, in dense low
vegetation on edges of ravine

Nov. 26 - ~~La Chorrera~~ headwaters
of Rio San Rafael, drainage of Rio La Plata,
Volcan Purace, Cauca attila (boundary
in dispute) 10600 m.
Rocky ^{sub}paramo slope

54 *Centropogon ferrugineus*
occasional

shrub 1.5 m. tall, fls.
white, 4 parted, sub-rotate,
stamens 4 incurved so
that the anthers are almost
concurrent alternate
with corolla lobes.

herb varying in height
with vegetation
up to a meter, ~~the~~ herbage
with oily odor when
broken, fls. white
infl. drooping

herb up to 1 m. tall,
branched, bracts and
fls. dull lavender-purple.
prostrate, slender,
fruits red.

prostrate or climbing
on other plants, fruit
orange, fleshy.
fls. bright ^{deep} pink
- lvs. rugose
rhizomes loosely crawling
through grass, not on ground.

small shrub, corolla deep orange-red
column whitish, anthers gray

22355 *Chusquea weberbaueri*
common, in places dominant

56 *Valeriana*
common locally

57 *Alchemilla*
common

58 *Ribes*

rare

59 *Solanum*

Nov. 26 - ^{Hot Springs & sulfur mine} ~~small tributary of~~ ~~headwaters~~
~~of Rio San Rafael~~ ^{of Rio San Rafael} n.e. of
Volcan Puracé, Cauca (or Huila),
(boundary in dispute) 10500
area of 1-2 hectares in
small valley filled with
hot, warm & cold springs
charged with sulfur or
iron, rich with H_2S .

60 *Rhynchospora*
common in patches

61
abundant on wet peat

62 *Sphagnum*
abundant on wet peat

63 *Equisetum*
edges of ~~stream~~ of stream,
iron oxide mud

ragged clumps, up to
1.5 m. tall, not all in
flower.
- low tangled masses,
odor unpleasant like
sweaty feet - fls. white.
- stems reddish.

fls. dull reddish

- erect, fls. violet, fruit dull ^{purple} blue.

bubbling up through
a bed of peat a meter
or more thick, ~~is~~ firm
in spots, soft in others.
Free sulfur deposited in
sun-off. Vegetation
scanty, few species -
a moss and a *Sphagnum*
have formed most of the
peat. *Rhynchospora* forms
large patches, also *Pistia*
sp. & *Puyo* sp.
clumps

forming large beds and
cushions, saturated,
appearing gelatinous,
large soft cushions

77365 ~~Distigma~~ *Lernethya*
common on peat

66 *Vaccinium*
common locally on peat

67
common locally on peat

69 *Senecio*
common on peat

Nov. 26 - near Tejera, Moscofan,
about 12 m. 50 on Moscofan
highway, drainage of Rio
La Plata, Cauca or Huila, 7800'
clearing filled with
deep weedy brush &
tree trunks. Surrounding
forest of mossy, cloud
forest type.

69 *Nertera granadensis*
abundant on ground

70 *Centropogon hartwegii*
common

71 *Cinchona pubescens*
occasional

The enormous inflorescences
may be because they are
on sucker shoots.

fls. pinkish, fruits dull
white, some bushes up to
1 m. tall.

- very prostrate, fls.
pink, petals 4, fruit red.

- fls. pink, dotted on the
limb with red-purple.

- bushes 0.6 m. tall, fls.
yellow.

an erect hollow bamboo is common
here, culms 2-3 m. thick to

4 m. tall, erect, lvs. wide,

branches in tufts at
in clusques but tufts

in apparent whorls,

sheaths several at

node, imbricate, but

apparently distichous,

conspicuous fringe of

fibers forming ligule of

sheath. Sterile so didn't collect it.

prostrate, forming a
mat, fls. yellowish green,

- fruit translucent red.

- local scrambling

shrub,

- tree that had broken or

rotted off about 4 m. up,

then sent out ~~some~~ shoots,

these now flowering.

Venous red, leaves somewhat

glossy above, flowers fragrant,

red without, pink within, hairs

white. Stipules recurved or revolute.

- 12 Nov. 20 - Santa Leticia, about
km. 54 on Moscoyan highway,
drainage of Rio La Plata,
Cauca & Huila (boundary in dispute)
partially cleared 7200'
mossy forest.

22972 *Vaccinium*
epiphytic on *Cinchona pubescens*

- 4 73 *Palicourea*
common in undergrowth
throughout region

- 6 74 *Cinchona pubescens* Vahl.
occasional

- 21 Nov. 26 - Roblal, near km.
58 on Moscoyan highway,
drainage of Rio La Plata,
Cauca & Huila (boundary in dispute)
open, Chusquea filled 8000'
forests on steep slopes.

- 7 75 *Palicourea*
common in woods at base of trees

- 5 76 *Palicourea*
occasional

- 6 77 *Cinchona officinalis*
occasional

The *C. pubescens* here
is easily distinguished from
that at higher altitudes by its
dull, hairy, elliptic leaves and
erect stipules.

clump with vertical
pendent branches, leaves
fleshy, stiff, funnel-
shaped with flowers
down inside, corolla pale
green, ellipsoid-cylindrical
shrub 3 m. tall, infl.
maroon, calyx dull
dark purple, corolla
dull gray-lavender,
fruit blue.
- tree 6 m. tall, 10 cm. thick,
leaf veins red, stipules
erect, connate.

small tree, fls. whitish

sapling 4 m. tall, 3 cm. thick,
sterile (bark sample) bark
with rusty fissure lines
stipules pale, small.

22378 *Ladenbergia macrocarpa*
common in woods, almost
up to paramo.

77 *Chusquea*
abundant throughout
region

80 *Vaccinium*
occasional, bush above road

Nov. 28 - 5 km. s. of Buga, Valle
del Cauca. 1000 m.
thickets along road, flat valley floor

81 *Euphorbia cotinifolia*
abundant weed tree

82 *Euphorbia cotinifolia*
abundant weed tree

Nov. 23 - Range of hills 3 km. n.e.
of Buga, Valle del Cauca
steep, eroded, cleared hillside 1750 m.

83 *Chusquea*
large colony on slope and in
patch of woods below

84 *Chusquea*
large colony

Nov. 23 - Sevilla, Valle del Cauca
85 *Euphorbia cotinifolia*
small tree, probably planted.

tree 8 m. tall, 10 cm. thick,
fls. white, fleshy, very
heavy fragrance.

— dense tangles of arching
canes 2-3 m. ~~deep~~ deep,
flowering throughout
region at least 10 km.
across, spikes blackish.
— shrub 1 m. tall, leaves
thick, flat, calyx with
lobes green basal wings
red.

small tree 3 m. tall, latex
abundant, said to be
poisonous to skin but with no
effect on back of
my hand.

long slender pendent
canes hanging down
slope, all plants observed
~~fls.~~ fruiting except one (#22394)
all plants except this one
were fruiting.

leaves dull deep purple, spotted
with green, color varying different
plants. Tree 5 m. tall, latex said to be
poisonous to skin.

This
group is
very
distinct

Nov. 29 - Guindis Pass west
slope below Depression, Caldas
thickets along road. 10,500'
sparse woods.

22386 *Chusquea*

Nov. 29 - Depression, summit
of Guindis Pass, Caldas - Tolima
boundary 11,400'

87 *Nertera*

exposed crest, turfey banks
with low wind-beaten
bushy vegetation, common.

88 *Polytrichum*

vertical bank on exposed
bushy windswept crest.

89

Nov 29 - 5 km. south of Chicorot,
up the Rio just west
of 2nd range of hills, Tolima
flat dry bushy, then forest 1700'

89c *Landia*
common

89a

Miconia
exposed crest

89b

Uncinaria
exposed crest

tangled in brush, all
fruiting for a km or more
along road.

prostrate, forming mats
of yellowish, fruit
red, fleshy.

~~stiff~~ stiff shrub 3 m tall,
branched long, appears
conifer-like from a distance,
fruit green.

Dec. 10, - Barris San Cristobal,
Bogota, Cund. 1700'

~~at~~ clay pit with pools
of water, grazed by donkeys
22390 *Solanum*

91 *Baccharis*

forming small thickets

92 *Eupatorium*

common

93 *Larongchis*

common on bare clay slopes
and vertical faces

94 *Juncus*

rare, ~~at~~ rock crevices

95 *Chenopodium murale*

96 *Malva parviflora*

~~at~~ occasional

97 *Malva*

occasional

98 *Spergularia*

occasional

99 *Eleocharis*

around muddy pools

22400 mixed collection. *Congea* *sanhatensis* (Ritz.)
~~Engelm.~~ E. Walker & *Congea* *tonariensis*
occasional (L.) Cong.

01 *Plantago*

common

02 *Lepidium*

occasional

herb 1 m. tall, fls. white
~~at~~ tinged with purple
outside, fruits green &
gray variegated when
immature, yellow when
ripe.

shrub up to 1.5 m. tall,
fls. whitish
small bushes, fls. purple

on ~~gray clay slopes~~ and
vertical faces. prostrate

grayish green

fls. pinkish-white.

leaves terete, fleshy,

large clump

erect, involueral
bracts purple-tipped.
varying greatly according
to habitat.

22403

shade of bank, rare

04 *Eclanum ~~virgatum~~*
common05
common06 *Cotula coronopifolia*
abundant, especially
around muddy pools07 *Rumex obtusifolius* ^{det. H.K.}
abundant ^{det. H.K.}08 *Polygonum punctatum* Ell. ^{det. H.K.}
common, especially in muddy
depressions09 *Chenopodium ambrosioides*
common10
occasional in ^{trampled} grassy spots11 *Grapphalium*
common12 *Aster*
rare13 *Grapphalium*
common

flowers yellow, inner
bracts maroon.
rank spreading herb,
fls purplish.
fls yellow, rays short

heads yellow, lvs.
succulent

stems reddish, fls.
white. Spreading
herb, rooting at nodes.
odor rank

prostrate, fl. with tub
& throat yellow, limb
white with purple stripes.
leaves glabrous and
green above, as distinct
from # 22413, with which
it grows and does not
apparently intergrade
with, at least in leaf
shape and the green upper
leaf surface.
rays white, disk turning
reddish, bracts maroon.
leaves arachnoid-sericeous
above, as distinct from # 22411,
with which it grows and does
not intergrade at least
in leaf shape and hairy
upper surface.

70

1944 - Colombia - Ecuador

22414 *Polygonum segetum* HBKdet.
9/6

rare

of Risquallabamba, w. of
Dec. 23 - Valley of Tumbaco,
e. of Quito, Pichincha 8000'

L 15 *Hedyotis*

roadside bank in ravine, common

Dec. 24 - lower slopes of Volcan
Pichincha, just above Quito, Pichincha
ledges and vertical banks
in bottom of canyon 9000'

L 16 *Hedyotis*

crevice on rock wall

L 17 *Lepidium*

ledge

L 18 *Alchemilla*

ledges

L 19 *Drymaria*rock crevices and bushy
spots on vertical wallsL 20 *Helaginella*

vertical shaded rock face

L 21 *Hymenophyllum*

shaded rock face

L 22 *Cotula*

earth ledges

L 23 *Apium leptophyllum*

earth ledges

Cundinamarca - Pichincha 71

flowers bright magenta
pink, barbacaespitose clumps, fls.
white.fls. white, buds tinged
with reddish distally.
tangled herbprostrate, pendent over
edge of ledge.
tangled with other
vegetation, fls. white.very prostrate, adhering
to rock, spreading from
center, with older parts
dying. rhizome conspicuously
glaucous, frond very soft.
center of disk yellowish

Cultivated plants observed in
Quito (not collected)

Hedera helix

Passiflora mista

Thuja orientalis

Grevillea robusta

Tropaeolum majus

Centauria erythraea

Oxalis martiana (?)

Rosa

Chamaecyparis brevifolia (?)

Antirrhinum majus

Gilera armeria (?)

Pelargonium

Pinus (at least 2 sp.)

Cupressus

Cynoglossum amabile

Platanus occidentalis (dissected)

Eucalyptus globulus

Adella

Agapanthus

Oreopanax (?)

Musa ensata

Phoenix canariensis

Tecoma stans

Canna

Caesalpinia

Matthiola incana

Eschscholzia californica

Delphinium ajacis

Colubaria maritima

Tagetes

Zantedeschia

Cosmos tinctoria

Pelurnia

Cobaea scandens

Solanum

Xanthus caryophyllus (manajilla)

Plants observed cultivated
in Bogota

Acacia melanoxylon

Acacia baileyana

Acacia floribunda or *dealbata*

Eucalyptus globulus

Eucalyptus citriodora

Dianthus caryophyllus

Plants observed cultivated
in Cali

Cananga odorata
Erythroxylon coca
Ceciba pentandra
Triplaris
Spathodea campanulata

Dec. 31 - Plants observed
cultivated in Lima (not all)

Ficus

Jacaranda

Kigelia

Gossypium

Merium oleander

Roystonea regia

Morus

Quisqualis indica

Isora coccinea?

Pelargonium zonale bsp.

Zea mays

Acalypha wilkesiana

Crotopsis lanceolata

Bougainvillea spectabilis

Hydrangea japonica

Begonia

Vitis vinifera

Canna var.

Antigonon leptopus

Salix chilensis

Populus

Eucalyptus citriodora

Catharanthus rosea

Fraxinus

Quercus

Philodendron

1944 - Ecuador

Dec. 27 - Plants observed
cultivated in Guayaquil

Dalmanea regia
Schinus molle
Sabal
Honduras

1944 - Peru

Dec. 29 - Plants observed
cultivated in Talara & Chiclayo

Coleaenum variegatum
Pynead granatum
Prosopis

Casuarina
Hibiscus

1944 - Ecuador

Dec. 28 - Road west from
Guayaquil toward Salinas

A dry bushy type
of vegetation, practically
leafless at present
(end of dry season) with
all sorts of legumes,
caneas sp. (leafless
with red infls. & fls.)
tangled with vines.
In low wet places
are *Cecropia*. The
whole dotted with
great Ceiba trees
in young bright
green leaf. Also a
lot of *Prosopis* sp.
(called atgaroba).

1944 - Peru

Dec. 29 - West Coast.

From Ecuador border
to Lima is a strip
of dry lowlands such
as I have never seen
before. Great flats
with either abso-
lutely nothing or
only a few scattered
bushes. Great sand
flats, some with
crescent shaped dunes
moving n.e.; to the
south the mts. come
closer to the ocean.
On these are no
plants at all, often.
On the small islands
off shore are no
plants.

Along stream courses
are large irrigated
regions, some at
least raising rice,
others probably
maize & cotton.

It is hard to imagine
anything as
completely bare as
this region in general.

Would be a good
place to study plant
geography added to its
simplest terms.

Road runs length of it.

- Jan. 1 - Rio Rimac above Lima
Km. 24 22 km from Lima
Flat bottom of valley,
hills around dry, but
water flowing in ditches
in bottom, much
arundo and a grass that
looks like a small
Gynerium (lvs. destruction
and correct infl.)
- 22424 Waltheria
along roadside and ditch banks
- 25
common along road
- 26 Chloris
common on ditch banks

- Jan. 1 Rio Rimac above Lima
Km. 58 60 km from Lima
bottom and lowest slopes -
dry rocky soil, more bare
ground than vegetation.
- 27 Alternanthera
flat
- 28
common
- 29 Jatropha
common on rock slopes
- 30 Iochroma
valley bottom
- 31 Tournefortia
valley bottom
- 32 Schinus molle
most abundant shrub in valley bottom

bush forming low
mound
prostrate, lvs. gray,
fleshy, fls. white
loosely covering ground,
rhizomes very deep.

prostrate, prickly

low branched bare
bush, very lactiferous,
fls. white.
shrub 1.5 m. tall, fls.
whitish.
ragged shrub 1 m. tall, fls. white.
small tree or large shrub.
4 m. tall, fls. greenish white, panicles
pendant.

27433 *Cestrum*
valley bottom

Jan. 1 - Valley of Rio Rimac
above Lima, km. 6.8 ^{6.0 km. one Lima}
rock ledges near bottom
of canyon, sparse cactus vegetation

34 *Senecio*

35 *Caesalpinia spinosa* (Mol.)
common

36 *Baccharis*

37 *Jatropha*

38 *Oxalis*

38a *Peperomia*

Jan. 1. Valley of Rio Rimac, above
Lima, km. 7.4, bet Vicos and
San Mateo ^{5-6 km. one Lima}
talus slope, dry and rather
open, below road.

39 *Phytolacca*

40 *Lolium*

41

Jan. 3 - Chiclayo
sand flats around airport

42

43

forming mounds in sand

shrub 1 m. tall, branches
long and weak

shrub 1 m. tall, fls. yellow
shrub 2 m. tall, seeds
are said to be source of
tanning material "tara"

shrub 1.5 m. tall
low branched shrub
with bare fleshy
stems, fls. scarlet,
sap watery,
stem fleshy,
fleshy

fls. pinkish white
- spikes erect
- prostrate, fls. purple.
suffrutescent herb, fls.
deep salmon

prostrate, lvs. fleshy, fls. white.
prostrate or depressed,
fls. white.

Jan 1 - Valley of Rio Rimac
from Lima up to bet. Vaso
and San Mateo

The Rio Rimac has
its sources in the
snow fields at 16,000' and
above, and brings, especially
at times, a considerable
column of water down
to Lima. Much of
this runs underground.
At Agua Dulce, near
Mindoloes, a series
of flowing springs
gush out of the cliffs
above the ocean. The
wet cliffs here bear
a very interesting
herbaceous vegetation -
Calceolaria, *Adiantum*, etc.

The hills about Lima
are completely bare,
at least the slopes.

74

Jan. 5 - Alaoag, 30 km. s. of
Quito, Pn. Pichincha 9400
raised bog in pasture,
quaking in spots, peaty but
without Sphagnum.

22,441

L 45

L 46

L 47

Juncus

Rynchospora

dominant in quaking places

Jan. 5 - Los Alpes, drainage
of Rio Quintasol, 5 km. above
Gonzacote, on slopes of Cerro
Crayon, 35 km. s. of ⁴⁴⁰⁰Quito
Pn. Pichincha semi-cleared slopes, cut
by ravines, originally
dense cloud-forest. 9300-9400

L 48

Phytolacca

cultivated plot

L 49

Folium hyprocarpium
edge of thicket

L 50

Cinchona

edge of thicket

L 51

Palicourea

small clearing

L 52

thicket, rare

L 53

patches of woods

- rays white to pinkish, disk yellow,
forming a mat on surface
of water or thin mud.

other plants much larger.
fls. magenta.

- vine-like, fruits orange,
fleshy.

- sprout 1.5 m. tall. C. pitagoras
found commonly nearby,
but pubescens only seen
1500' lower.

- small tree 5 m. tall, fls.
whitish to purple.

- ripe fruits purple.
single stems, 1 m. tall,
lactiferous, fruit reddish -
brown on one side.

- sparsely branched low
suffrutescent herb, lactiferous,
fls. magenta, lobes pale pink, within blackish

L 27,454

- 55 *Manettia*
wet place in clearing
thicket, shaded

- 56 *Nertera granadensis*
banks, shaded and in sun

- 57 *Cinchona pitayensis*
small patch of woods on
edge of cliff

- 58 *Cinchona pitayensis*
steep bushy slope

- 59 *epiphytic*
on *Cinchona* tree, epiphytic

prostrate, fl. white

vines, fls. white, veins
not visible on the somewhat
pallid under surface of
the leaves.

- prostrate, fls. greenish.
- fruit bright red, soft.
tree 15 m. tall, 30 cm. thick
at base, abundantly
fruiting, barely in bud,
some buds showing purple.
leaves coriaceous, glossy,
veins prominent
beneath, impressed
above. old leaves turning
red. Bark bitter, very
tightly adhering to trunk
& branches. (2 bark samples
1 from trunk, 1 from branch
less than 7 cm. thick). (This
tree same as yielded
~~the~~ Martin's bark sample
#5).

7400'

- stump with clump of
sterile sprouts 3 m. tall,
leaves glossy,
dark brown

Jan 5 - near Ganzaquito,
drainage of Rio Quitasol,
north of Cerro Corazon, 15 km. n.e. of
of Quito 7200

steep walled valley
mostly dense second growth
up to 4-5 m tall, cut for
charcoal.

72460 *Cinchona pubescens* Vahl
edge of cliff above river,
common in area, up to 7500'

L 1 61 *Cynoglossum amabile*
edge of trail

L 6 62
steep rocky bank

L 2 63 *Cinchona pubescens* Vahl
along trail, common

L 3 64 *Gonzalagunia*
along trail, common

L 1 65 *Tropaeolum*
along trail in thicket

small sterile tree 5-6 m.
tall, 3 cm. diam. leaves
dull above, veins slightly
impressed above, prominent
beneath, reddish, stipules
erect at first, becoming
reflexed. (bark sample)
fls. bright blue

shrub 2 m. tall, fruits
red-purple but immature,
bracts reddish, corolla
vermillion with pale
green tips. leaves pale
green beneath, bright
green above with pale green
veins.

sterile sprouts 3 m. tall,
leaves dull above pale
beneath, veins reddish.
bush 1.5 m. tall, fls. white,
fruit fleshy, white flushed with purple,
vine, tangled in bushes,
both petioles and pedicels
coiling like tendrils,
spur vermillion, lobes green
enlarged filaments black

22466 *Cinchona pubescens* Vahl
small stream terrace, in tall brush,
shaded.

~~67~~ ~~Diospyros~~

67 *Cinchona pubescens*
tall brush, shaded, on slope

68 *Diospyros*
wooded steep slope

69
steep, wooded slope

Jan. 9 - Quebrada Estancia, a small
tributary of Rio Pastaza below
Baños, 8 km. above confluence
of Rio Topo, Tungurahua
stream terrace with second
growth woods. 4000'

70 *Cinchona pubescens* Vahl
shaded

71 *Cinchona pubescens* Vahl
opening

72 *Cinchona pubescens* Vahl
along trail

73 *Ladenbergia*
edge of opening

74 *Ladenbergia*
shade

~~75~~ wooded slope with
ravine 4000-5000'

75 *Galium hypocarpium*

sterile sprout 3 m. tall, leaves
dull, thin.

sterile sprout 1.5 m. tall,
stipules erect becoming
recurved

small tree, leaves in
one plane on branches,
fls. white, fruit very immature
straggling shrub,
fls. very deep purple.

Jan. 9 - Pichincha 4300'
224708 *Anemone*

cult. in park
herb 1 m. tall, fls. purplish
pink.

small tree 5 m. tall, leaves
green, dark & dull above,
paler ~~at~~ beneath.

stump sprout, 1.5 m. tall,
midrib & veins reddish.

stems stump sprouts
4 m. tall (bark sample)

sterile sprout 5 m. tall
(bark sample) (not for analysis)
tree 8 m. tall, 15 cm. thick,
fls. white, fragrant, not
really in season. (Bark sample)

wine, tangled in bushes,
several m. long, fruit orange, fleshy.

22476 *Carex*

wet banks

77 *Phytolacca*

cleared weedy places

18 *Cinchona officinalis*

open low ridge between
ravines in clearing
(found from 4500' at least up
to 6000' according to local
information)

79 *Burmeistera*

along trail

30 *Drymaria cordata*

cleared ground

Jan. 9 Rio Pastaza above Baños,
Prov. Tungurahua 6200'

81 *Hedyotis*

cliffs of volcanic rocks
common from 6000' - 9000'

herbs up to 1.5 m. tall, infl.
crimson, fls pink, infl.
fruit black. infl. pendent
in fruit. Mass collection,
each ~~fls~~ piece taken from
a different plant, scattered
along trail.

4500'
small sterile tree,
which had been broken
off 1.5 m. from ground
and had sent up several
sprouts to 4-24 m. more.
~~fls~~ leaves with veins
prominent beneath,
impressed above,
much like *Cornus*
florida leaves, red
when old

4400'
herb up to 1 m. long,
ascending, calyx purple,
rest of flower green,
faint skunky odor,
stem somewhat lactiferous
fruit inflated, green with
purple calyx lobes.
prostrate.

fls. white.

Jan. 10 - hills west of Riobamba
~~Tuza~~ Lican, Prov. Chimborazo
 eroded, badly over-grazed, rocky
 slopes 8200'

L2432 *Hedyotis*
 abundant

Jan. 10 - headwaters of Rio Grader
 15 km. south of Chimborazo Volcano,
 Prov. Bolivar

high grassland, bunchy
 grass and *Azorella*? hummocks

L23 83 *Hedyotis*
 common in hummocks

L2 84 *Hedyotis*
 clumps scattered here
 and there in grass-land

L2 85 *Lesymbrium*
 deep gully above road

L2 86 *Lepidium*
 deep gully above road

L4 87 *Calceolaria ericoides* Vahl det. Wurdack
 slope below road

L1 88 *Hedyotis*
 rocky places along road
 (common down to 7000' or below)

L4 89 *Hedyotis*
 (same)

L2 90 *Hedyotis*
 (same)

L3 91 *Acaena*
 open slopes

dwarf shrubs, fls. white

12000' erect, branched shrub

12000' up to 1 m. tall, involucres
 golden, fls. orange.

12000' fls. red-brown and yellow.

12000'

12000' large clump of erect
 stems up to 1 m., flowers
 bright sulfur-yellow.
 fls. white, longistylous,
 buds reddish without.

11000'

same, brevistylous

same, longistylous

11000'

depressed shrub, peduncles
 erect.

Jan. 10 - canyon of Rio Gradas,
20 km. south-south of Chimborazo Volcano,
Prov. Bolivar 9500'
deep canyon, with scattered
woods up to 10500'. denser
below, Podocarpus sp.
a conspicuous component.
22492 Podocarpus
common from 9000' to 10000'.
more rare up to 10500'.

8 93 Podocarpus
same

94 Hedyotis
common on ^{rock} ledges above
road

Jan. 10 - headwaters of Rio
Plegas above Balzapamba,
6 km. s.w. San Miguel, Prov. Bolivar
cut-over cloud forest,
only scattered patches
left.

10 95 Cinchona pitayensis var.
occasional to common

96 Cinchona pitayensis var.
occasional to common

small gnarled trees,
up to 6 m. tall, seeds
immature, fleshy receptacle
glaucous.
same but staminate.

dwarf shrub, buds pinkish
without, fls white

9700' small tree 5 m tall,
leaves sub-glossy above,
petiole & midrib red,
leaf turning red when
old, smooth, veins
not impressed
above nor especially
prominent beneath. (bark
scaly)
9700' - small sterile tree
(data on leaves or above)

- L-2497 *Cinchona pitayensis* var.
small patch of woods on
steep slope

Jan. 11 - Headwaters of Rio
Playas, above Balyapamba,
5 km. W. of San Miguel,
Prov. Bolivar 9200'

- L-98 *Cinchona pitayensis* var.
bushy cut-over forestland.
only tree seen here,
more at lower elevations,
down to 8500'

- L-99 *Podocarpus*
rare

Jan. 11 - Valley of Rio Playas,
3-5 km. above Balyapamba,
Prov. Bolivar 3400' - 3800'
Plantations of coffee, bananas,
etc. wet enough to support
considerable growth of epiphytes

8600'

tree 8 m. tall, 15 cm. thick,
heavily punctate, leaves
~~glossy~~ glossy above, veins
not impressed above
nor prominent beneath,
petioles & ^{mid}veins reddish,
leaves turning red
when old, fruits reddish
green. (with sample)

small tree, 5 m. tall, leaves
glossy above, petioles and
midribs reddish, veins
somewhat impressed
above, fls. dull purple
with white hair on
margins, tubular
withia; fruit green, very
scarce, most inflorescences
completely sterile.
tree 15 m. tall, sterile.
"olivo".

Cinchona pubescens
cultivated here, scattered
in with coffee, also
in door-yards. Planted from
cuttings, bark harvested when
trees are 5-15 cm. thick, ^{new} cut 20 cm.
from ground so as to sprout.

- 22500 *Cinchona pubescens* var. *succinultra* 3900'
cultivated near house,
said to be from wild stock
from this area.
- L17 01 *Cinchona pubescens* var. *succinultra* 3300'
cult. in coffee plantation
- L18 02 *Cinchona pubescens* var. *succinultra* 3400'
same
- L18 03 *Cinchona pubescens* var. *succinultra* 3400'
same
- L18 04 *Cinchona pubescens* var. *succinultra* 3400'
same
- L18 05 *Borreria laevis* 3400'
weed in coffee plantation
- L18 06 *Borreria laevis* 3400'
weed in coffee plantation
- L18 07 *Hamelia patens* 2500'
river bottom land

- clump of sterile sprouts
4 m. tall, leaves scarcely
showing red color till old.
- small tree 5 m. tall, leaves
sub-glossy above, veins
scarcely reddish, leaves
turning bright red when
old, flowers with
tube and throat bright
pink, lobes pale, hairs
white. (bark sample,
but bark was cut around
below where sample was
taken)
- same data but no flowers,
fruiting branches completely
without leafy side twigs.
(no bark)
- small tree 5 m. tall, 9 cm.
thick, leaves green, dull
above. (bark sample)
- same (no bark)
- fls. white
- fls. pink
- shrub 2 m. tall, fls. red-
orange, fruit purple-black
when ripe, 5-celled.

— headwaters of river, 10 km.
s.w. of Quilo
road cut in brushy
vegetation

L
77515

1100'

L1 *Mayraria*
rather shaded place

L1 17 *Lambus*
cultivated at entrance
to farm.

same

1060'

L1 18 *Nertera*

any of more about
Cumbaza 2-3 km.
w. of Quilo.

L3 19 *Calceolaria* by stream
— also 200 ft

L4 20 *Nertera* by
road cut, rocky

L4 21 *Anchona pubescens*
steep brushy canyon
wall

stems of heads, one
with ligules blue,
the rest tubular
or an. whitish, long
inserted.
fls white.

herb 2-5 m tall,
leaves mostly yellow,
old white, fruit greenish
by contrast.

prostrate, leaves
all at, leaves greenish.

9700' prostrate, fruits
— large.

prostrate, leaves
stiff, to 4 m. tall,
fruit brownish
red.

9400' erect tree 6 m. tall,
10 cm thick, stem
leaves dull, ven. red.
(dark sample)

L5 15 *Cinchona pubescens* var.
steep ravine side below
cultivated forest in thicket

L5 23 1/2 m.
roadside thicket, canyon wall

L3 74 *Agave*

road cut, a constant

L9 25 *Cinchona* (var. *pubescens* var.)
~~thicket~~ forest with
dense thicket and other
undergrowth on steep side

L1 26 1/2 m. to a *canadensis*
road cut

L1 27 *Palium hypocaulum*
road cut

71 1/2 m. below *Quindaro*
near *Barro Colorado* Station
river banks

L5 28 *Agave* var.
roadside bank

L1 29 *Cinchona pubescens* var.
open roadside, rare

L2 30 *Cinchona pubescens* var.
open roadside, common

L5 31 *Cinchona pubescens* var.
open cultivated clearing
common

7100 small tree 7 m. tall,
10 cm. diam. leaves
dark, "cassia" bark
and 1/2 m. diam.

7200 - a tree 1.5 m. tall
no red - white bark
red in bark, and deep
green thin + soft, and many

7200 ~~tree~~

7200 - tree 15 m. tall with
several trunks, to 4
cm. thick,
leaves dark, in
thicket (thick to
wood. - (sample)
prostrate, with branches
red
fruit brown, lance
olant 3 cm. long

prostrate, leaves
white
sterile shrub 1 m. tall
sp. # 7253 (as *C. pubescens*)
sterile shrub 1 m. tall
sp. # 7254 (as *C. pubescens*)
sterile tree 5 m. tall
leaves dull, veins becoming
reddish.

- L. 32 *Brassica* *crucifera*
 weed in cultivated ground
 L. 33 *Penstemon*
 weed in cultivated ground
 L. 34 *Dryopteris*
 weed in cultivated ground
 L. 35 *Asclepias chrysocephala* (L.) E. Smith
 weed in cultivated ground
 L. 36 *Commersonia bartramia* L.
 common weed in cultivated ground

Jan. 17 - Monument to the
 Independence of the Republic
 5 km. n. of Masagui, 15 km.
 n. n. e. of Quita, Pichincha
 open sand flat with 7000'
 scattered cotton, ~~tree~~ and
 herbs

- L. 37 *Verbena*
 L. 38 *Euphorbia*
 L. 39 *"*
 L. 40 *Cardonema ramosissima*
 L. 41 *Croton*
 common

Jan. 24 - Quita, Pichincha
 crevices in mud wall 9300'
 L. 42 *Calceolaria*
 L. 43 *Verbena*

- cf. *Verbena* - fls. white
 erect
 common
 prostrate, fls. cream
 fls. white, erect
 in the m.

- fls. white, plant
 prostrate in large
 - clumps
 - prostrate, purple
 prostrate, root enlarged
 - flowers white
 - prostrate
 gray, flowers whitish

- pendent, much branched herb, fls. ^{greenish} cream
 much branched, many stems from
 thick root, fls. purple

Jan. 26, 1945 - bet. Tumbillo
 & Alouag, 25 km. s. of Quito,
 Prov. Pichincha
 brush in fence - rows along
 roadside. 9300'

22544 *Datura*
 rare

L 45 *Franseria*
 very common

L 46 *Datura*
 common

L 47 *Momonia*
 common

L 48

L 49 *Fuchsia*
 occasional

with
 M.A. Giler Jan. 26-1945 - hill above Laguna
 de Yumbo, 9 km. n. of Ambato,
 Prov. Tungurahua. 9300'
 In *Opuntia* and *Agave* rows separate
 cultivated patches, volcanic ash soil.

L 50 *Eriogon*

shrub 2 m. tall, fls. 2
 pendent, throat deep
 chrome yellow, tube
 greenish. Used as a brachero.

shrub 2 m. tall.
 "artemisa" Used as a brachero
 shrub 2.5 m. tall, fls.
 pendent, distal part
 of throat scarlet with
 green vein without,
 proximal part yellow
 with green veins, tube
 green. Used as a brachero.

"Guandú"
 shrub 2 m. tall, fls.
 indigo-purple, with
 yellow apex. fruit black
 when ripe. "iguilan"
 vine climbing over bushes,
 fls. deep purple.

shrub 1-1.5 m. tall,
 fls. ~~white~~, vermilion.

fls. white, tips of involucres
 bracts purple.

L 22551 Verbena
L 52 Erigeron

L 53

L 54 Campanula
L 55 Artemisia
common

L 56 Solanum
roots deep in cacti

Jan. 26, + Pampa de Luisa,
near Estacion Luisa (Machin)
Prov. Tungurahua 11600'
bunch grass land, with Azorella turf.

L 57 Vaccinium
abundant along top edge of
road-cut.

L 58 Galium
common on open slope

with
m.a. giles
Jan. 27 - Rio Chubuga (Chubün),
3 km. below Cajabamba, Prov.
Chimborazo 10000'

L 59 Chrysanthemum
railroad cut in dry volcanic ash

L 60 Hedysotum

L 61 Senecio

L 62 Salvia

- fls. whitish,
- fls. white, turning
brick red.
- chiasa, tangled over
other plants, fls. ^{greenish} cream
white.

- fls. lavender.
strong sage odor

spreading herb, fls.
purple, fruit mottled green.

prostrate, fl. rose pink

small bunches, fl. lavender.

rays white, disk yellow.
- "Santa Maria".
flowers white, buds purplish
- without. "chiasa".
plant depressed, leaves
fleshy, heads yellow.
- fls. orange red, leaves with
a strong liniment odor when
broken

Jan. 27 - RioBamba, Chimbrago
Cultivated in park 9500

L 22563

L 64

Jan. 27 - Pampa de Colta,
bed of Laguna de Colta, 3 km.
s. of Cajabamba, Chimbrago
lake mostly drained,
bed covered with a very
short, dense turf of Alchemilla
and a sterile grass.

L 65 Alchemilla

Libambe,

affl. of Rio

with 2 miles

Jan. 27 - Canyon of Rio Libambe,
Chanchán, Chimbrago
8000 - 9300'

brushy over-grazed slopes

L 66 Acalypha

L 67 Cassia

very common

L 68 Cuphea

L 69 Borreria

L 70 Alternanthera

in grazed and trampled places

L 71 Polygonum

L 72 Alternanthera

L 73 Chenopodium

L 74 Chenopodium

L 75 Chenopodium ambrosioides var.

spreading tree 5 m. tall,
- dense crown.
- small tree, fls. magenta
purple, fruit green.

prostrate, fls. yellow within.

small bush, style branches
red, "cola de gallo"
bush 1.5 - 2 m. tall, flowers
bright chrome yellow.
- calyx reddish, petals lavender
- fls. white
- prostrate

- fls. white, jointed without
- prostrate, "empedradillo"
- spreading bushy herb.
"palitara"
- spreading bushy herb.
- spreading, prostrate, bushy
strongly aromatic herb. "baico".

- 22576 *Chenopodium*
 L 77 *Anagallis arvensis* blue form
 L 78 *Croton*
 common
 same ^{dry} cliffs and talus at
 their base - cliffs covered
 in many places with *Acacia*!
 L 79 *Nottholacra*
 crevices and ledges
 L 80 *Polypodium*
 Talus
 L 81
 foot of talus among boulders
 near stream
 L 82 *Adiantum*
 talus, uncommon here but
 very abundant along railroad
 cuts at somewhat higher altitude
 L 83 *Pellaea*
 Talus, rare
 L 84 *Oxalis*
 talus, very common
 L 85
 abundant on cliffs
 L 86
 L 87 *Tillandsia usneoides*
 hanging on cliff
 L 88 *Gnaphalium*
 Talus
 L 89 *Salvia*
 L 90 *Lupinus*
 Talus

- low bush, leaves ^{glaucous} ~~grayish~~
 - fls. deep blue with purple
 - center
 - bush 1 m. tall, fls. whitish

fronds erect, light green

- herb up to 1 m. tall, young
 - infl. blackish-purple.
 young fronds reddish.

- fls. white, leaves
 - slightly grayish green.
 - stems branching, pendent.
 - bracts reddish.
 - shrub 1 m. tall, fls. blue-
 purple
 - used in some parts of
 Ecuador to stuff mattresses.
 prostrate, densely branched
 - aromatic herb fls. purplish
 fls. violet with whitest
 triangle in banner.

- 22591 *Quararia*
 common on talus
 92 *Helaginella*
 shaded place on cliff
 93 *Asplenium*
 crevice in cliff
 94 *Cheilanthes*
 crevices in cliff
 95 *Plantago*
 talus
 96 *Melilotus*
 talus
 97 *Polypodium*
 rock crevices
 98
 talus, on earth
 99 *Pilea*
 talus
 22600 *Hedyotis*
 talus, common
 01
 talus, rare
 02
 talus, on earth
 03
 talus
 04 *Hedyotis*
 talus, common
 05 *Argemone*
 foot of talus, common
 06
 talus

vine several m. long,
 fls. orange, fruit immature
 - (monoecious)
 adhering flat to rock.

fls. yellow

fl. bright purple

fls. white, longistylous

small clumps, fls. scarlet.

mat forming

fls. white, brevistylous

glaucous herb, fls.
 straw-yellow, sap orange.
 - "amapola"
 prostrate, fls. brick red

- 22607 *Salvia*
 08 common on talus
 09 common on talus
 10 *Schinus molle*
 common on talus
 11 *Hedyotis*
 common on talus
 12 *Lantana*
 common on talus
 13 *Hedyotis*
 common on talus
 14 *Mirabilis*
 common on talus
 15 occasional on talus
 16 *Mirabilis*
 common locally on talus
 17 *Begonia*
 occasional on talus and ledges

- fls. blue
 - fls. violet to blue, anthers orange, all on one side.
 - bush 1.5 m. tall.
 - heads bright purple.
 small tree 3 m. tall, with scaly bark, fls. whitish, fruits turning pink.
 - fls. white, brevistylous
 prostrate, fls. deep chrome yellow.
 - fls. white longistylous
 spreading ascending branched herb, a number of stems from one root. fls. deep rose purple, filaments and style curved upward.
 - shrub 1.5 m. tall, flowers deep purple. "pepino" fruit eaten.
 spreading ascending herb, several stems from one root, flowers brilliant deep rose purple, filaments and style curving upward.
 tuber range within, ~~fls.~~ leaves viscid, white beneath, fls. scarlet.

22618

very common on talus

19

common on talus

20

common at foot of talus

21

Phenax~~occasional~~ occasional on talus

22

very common on talus

23

Morisonia

occasional on talus

24

occasional on talus

25

Solanum (*hyoscyamum*)

common at foot of talus

26

Baccharis

common on talus

27

rare on talus

Jan. 29 - Cerro Buerán

(Páramo de Curiquinga), 5 km.

S. of Cañar, Prov. Cañar

open turfey grassland 11600-11800

with brush in sheltered

or steep places.

28

Azorella

29

Senecio

30

31

Calandrinia

common

shrub 1 m. tall, inflorescence

mostly diseased and dead.

prostrate, fls. scarlet

bushy herb 1 m. tall, fls.

yellow.

depressed shrub.

large clumps.

fls. deep indigo

prostrate, fls. orange

sprawling aromatic,

vivid herb, fls. bright

yellow, fruits green.

shrub 1.5 m. tall,

heads whitish.

without stinging hairs.

small round hummock

fl. white, bracts with

purple tips

spike purple

fls. white

- 22632 *Senecio*
abundant in patches
- 33 *Poa*
- 34 ~~Carex~~
mixed in turf
- 35 *Panicum*
rare, mixed in turf
- 36
in wet turf
- 37 *Plantago*
- 38 *Ranunculus*
wet place
- 39 *Epilobium*
- 40 *Castilleja*
in bushy places
- 41 *Eleocharis*
wet turf
- 42 *Castilleja*
in wet turf
- 43 *Lisyranchium*
- 44 *Gentiana*
steep slopes
- 45 *Mimulus*
wet places
- 46 *Veronica*
- 47 *Carex*
bare spot in turf
- 48
steep bushy slope
- 49 *Lupinus*
along small streamlet

- leaves distichous, glaucous,
rays purple without, white
within.
- mixed in turf
flowers white.
- flowers white, anthers
purple (petals broader
than in #22634)
- fls. yellow, petals small.
- plant reddish, fls. pink.
bracts tipped with
scarlet, corolla green
with orange line beneath.
- bracts and calyx dull
- purplish distally
- flower yellow.
flower purple
- flower yellow with
- red dots on palate.
- fl. blue-violet.
dense tuft
- bush 1 m. tall, calyx red,
- corolla deep purple.
bush up to 1 m. tall,
fls. bright purple with whitish
wedge to banner.

- 22650 *Senecio (gynoxys)*
crest of steep, brushy slope
- 51 *Miconia*
steep, brushy slope
- 52
very abundant in open
grassy places
- 53 *Acacia*
common on slopes
- 54 *Calceolaria vicoides* Vahl det. W. Wurdack
common on steep, brushy slope
- 55 *Valeriana*
steep, brushy slope
- 56 *Ranunculus*
very common in wet turf
- 57
common locally

Jan. 29, 1945 - Along Rio Azogues P. Cañar
bet. Azogues and Chugquipata.
flats along river and low
bluffs nearby 8000'

58

flats

59

bluffs

60

Cheilanthes

crevices in masonry wall

61

Dodonaea viscosa

common on dry bluffs

62

dry flats

- bush, m. tall, fls. yellow
- ~~shrub~~ strictly erect, 1 m. tall
fruits, ^{dull} purple
small tufts
- low, suffrutescent herb.
- flower - sulfur-yellow,
plant caespitose, strictly
erect.
- pendent shrub,
fls. white, odor unpleasant
flower bright yellow,
petals appearing varnished
within.
- flowers white

- ovary green, perianth
coral red with green tips
bush 1.5 m. tall, fls. coral
red, fruits green.
tufts

bush 1 m. tall.

bush 1 m. tall, fls. white,
fragrant, (fruit said to be
black, but not seen).

22663 *Vicia*
flats near river

64
flats near river

Jan. 29 - Rio Azogues just
below Chugquipata, Cañar
bluffs and roadside 8000'

65 *Hedyotis*
bluff above road

66 *Galium*
bluff above road, rare

67 *Hedyotis*
bluff above road

68 *Linaria*
roadside

69 *Oenothera*
roadside

Jan. 29 - Rio Matadero below
confluence of Rio Machingara,
7-8 km. below Cuenca,
P. Azuay 8000'

70
roadside in river flat

Feb. 2 - w. side of Cerro Yanguang,
Ridge east of Rio Duda,
across from Pindilic

rather low wet forest with much
Chusquea and, about much "cervitens"

with
F. Prieto

10000-10500'

fls. violet. said to be
recently introduced
and becoming a bad weed.
prostrate, fls. brick
red.

pendent shrub up to
1 m. long, flowers white
- leucostylous.
prostrate

pendent shrub, flowers
- white, longistylous
flowers ~~corolla~~ rose
- ~~corolla~~ purple.
withered flowers
purplish.

erect suffrutescent
herb, 1.5 m. tall, flowers
scarlet (note variation
in length of style of fruit)

Cinchona microplylla fairly
common in this woods, has
on different ~~fruit~~ trees, different
shaped fruits, also varying amounts
of pubescence, suggesting cross with *C. pit*

- 22671 *Cinchona microphylla*
wooded slope

"fls. of this said to be pink &
fragrant, similar to those of 'rosado'"

- 72 *Hedyosmum*
wooded slope

- 73 *Cinchona microphylla*
wooded slope

- 5 *Meritana grandiflora*
cut banks of trail

- 4 *Cinchona microphylla*?
wooded slope

- 76 *Vaccinium*
bush along trail

- 77 *Cinchona microphylla*
wooded slope

- 78 *Vaccinium*
no plant seen

10000'

shrub 3 m. tall fruits
dull red, hair somewhat
tawny, leaves with veins
impressed above, very

10000'

prominent beneath, upper
surface shiny. "crespilla", "negro"
shrub 2 m. tall

10000'

small tree 6 m. diam.
6 m. tall, with much
shoots, fruits green to
purple. leaves glossy above,
with veins impressed
above, prominent beneath
(bark sample). same name as 27109,
prostrate, sterile

10000'

10500'

small tree 4 m. tall,
leaves glossy, veins impressed
above, prominent below, with
much less hair than usual,
fruit reddish green. same name

10500'

bushes 8-10 dm. tall,
leaves stiff, dark green
above, pale below, corollas
white, waxy, lobes revolute.

10500'

(not all from same plant)
shrub 3 m. tall, leaves
glossy above, veins impressed
above, prominent beneath,
hair tawny; fruits ^{dull} red-purple
"crespilla" "crespo" "negro"
semi-prostrate, fruit
half grown, leaves green above,
pale beneath.

22679 *Chusquea*
beside trail, grazed

80 *Cinchona microphylla*
wooded slope

81 *Gaultheria*
brushy slope

82 *Gaultheria*
brushy slope

Feb. 2 - East side of ^{Cerro Yanguang,} ridge east
of Rio Dudas, slopes of valley
called Ventanillas, above Shoray.
steep, wooded slope

83 *Partia*
brush along trail

84 *Pinguicula*
masses on vertical banks at
sides of trail

85 *Manettia*
brush beside trail

86 *Drymaria cordata*
vertical banks along trail

87 *Nertera granadensis*
vertical banks along trail

10500' a single tuft, the only plant
in fruit. Other large
thickets, perhaps the
same species, sterile.

10500' shrub 2 m. tall, leaves
shiny above, veins prominent
beneath, hair
tawny, fruits greenish-red
"caspillo" "caspillo" negro.

10500' bush 6 dm. tall, fruit
red, greenish on one side. ^{conspicuously}

10500' bush 6 dm. tall, fruit
green, bright reddish on
one side. leaves conspicuously
reticulate, veined beneath.

10600' weak erect herb in brush.
fls. purplish above, white
beneath.

10400'-300' leaves ^{with} ~~in~~ to margins,
pale green, thin, fls. with
pale lavender limb, purple
throat, greenish spur.

10700' vine, fls. white.

9900' prostrate, ~~corolla~~ ^{petals} white,
bifid, twice as long as calyx.

9800' prostrate, ~~fls.~~ fruit
scarlet, translucent-juicy.

with
fruits

Feb. 2 - Valley of ~~Vasquez~~ Rio
~~Morona~~ near Shoray,
7500
cleared rocky slopes above
river.

22688 *Vaccinium*
common

89 *Drupmania*
common in cultivated land

90 *Vaccinium*
common

with
fruits

Feb. 3 - Valley of Rio Moray,
e. slope.

Cañon, 7700-8600'

Thick wet forest on steep slope

91 *Cinchona pubescens* var.
common

92 *Podocarpus*
rare

93 *Vaccinium*
epiphytic

94 *Cinchona officinalis*
common

bush ~~to 1 m.~~ 1 m. tall,
fls deep coral red with
yellow-green tips. fruits
immature.
flowers white.

shrub 2.5 m. tall, flowers
deep coral red with
yellow-green tips

Cinchona pubescens + *C. officinalis*
growing together bet 8300 + 8600';
possibly hybridizing, almost
all here has been cut.

small tree 7 cm. thick, 6 m.
tall, sterile, leaves
green when old turning
dull reddish, dull above.
(bark sample) "rosada" "amarilla"
tree 50 cm. diam., 35 m. tall
part within reach sterile.
wood used for construction.

flowers and pedicels
vermillion, corolla
tipped with white ^{very distinct}
small bent over tree ^{on stem}
with erect sprouts
along stem, 7 cm. thick
near base, 6 m. long, ^{almost} sterile
bark very tightly adhering (bark easily

Cinchona
finca

22695

rare

96 *Cinchona pubescens*
common97 *Vaccinium*98 *Pilea*99 *Cinchona pubescens* var.
common

22700

epiphytic

01

terrestrial

02 *Cinchona*

A-R

scattered in woods
where bark gatherers have
cut down almost all *Cinchona* trees

03

rare

04

terrestrial

05

terrestrial

shrub, peduncle erect,
corolla coral red. stamens
all on one side, leaves
leathery, shiny, rugose
above.sapling 4 m. tall, leaves
dull above, turning red
when old. "rosada"epiphytic, flowers ^{dark} rose pink
pale toward tip, dull without.
fleshy, purplish greensterile sapling
4 m. tall, leaves green,
dull above. "rosada"sepals bronze-green, petals
pinkish white, lip with
purple spots in center.
spike erect, ovary green,
fl. bronze.mass collection of sprouts
only the tips and large
leaves of each, to demonstrate
hybridization between
the two species.scabrous shrub with long bare
branches, leaves, and
flowers only at tips,
flowers red (mature
flower picked up on ground).
fls. purplish bronzethe limb of perianth
parts dark purple, rest
of flower greenish white.

v. 766

on fallen log.

07

08 *Cinchona officinalis*

09

on fallen log, & earth

10 *Sanicula*

wet shaded slope

11 *Hoffmannia*

occasional in undergrowth

12

13 *Psychotria*

rare

14 *Hoffmannia*

common in undergrowth

15

common in undergrowth

16 *Cephaelis*

common in undergrowth

17 *Beliconia*

plant seen

18

occasional on ground

perianth dull orange,
spike nodding.

perianth bronzed-white,
lip deep purple.
- tree 6 cm diam., 6 m. tall,
leaves glossy above, fls.
deep purple, with white
hairs. fruit immature.
(bark sample)

- shrubby, up to 1 m. tall,
- fls. yellow.
- somewhat caespitose

- weak shrub 1 m. long,
- fls. red, fruit immature.
- erect, suffrutescent, up to 1 m.
tall, stem brittle, fls. scarlet
leaves deep purple beneath.
fls. white, stem rather
fleshy, stipules fleshy,
projecting.

- shrub up to 1.5 m., fls.
yellowish, fruit red
and fleshy when ripe,
- mostly immature
- herb, up to 1.5 m. tall, fls.
yellow.
- weak herb, fls. blue.

fls. bright purple, shrub
- fruit immature
flowers bronze-green, fleshy.

22719

rare, terrestrial

Pilea

rare in undergrowth

21

epiphytic

same west side of valley.
cleared slopes

22

Drymaria

in cultivated ground, weedy

24 Cephaelis

probably left from under-
growth of forest.

25 Drymaria

cult. ground

26 Vaccinium

patch of woods

27 Cinchona officinalis

28 Blechnum

29 Cinchona pitayensis

fls. whitish

stem fleshy, no
stipules.fls. pale bronze green, lip
reddish-bronze

2000'

small shrub, leaves
glossy, ~~fruit~~ fruit immature
fls. white.small subshrub, yellow-
green, fls. for

3500'

fl. white

3000'

low shrub, fl. pinkish,
leaves fleshy, fruit immature

2200'

sapling 2.5 m. tall, "costaricensis"

"

rhizome climbing, fertile
fronds ascending, sterile
horizontal.

"

small tree 6 cm. thick, 7
m. tall, sterile, leaves
leathery, glossy above,
veins somewhat prominent,
sucker shoots with
thinner much more
lairy leaves. bark
adhering to trunk (bark sample).

22730 *Ladenbergia*31 *Cinchona officinalis*
on ridge

Hacienda Fumillas, quebrada Fumillas
Feb. 4 - n. w. side of canyon of
Rio Pante just west of confluence
with Rio Jubal, 40 km. e. n. e.
of Azogues, Prov. Cañar 1900-3200'
wet disturbed forest on
steep slope, openings
filled with a giant *Chusquea*

32 *Cinchona pubescens*33 *Licyzos*
in opening34 *Cinchona pubescens*
edge of opening35 ✓
opening36 *Cinchona pubescens*37
openings(considerable resemblance to *stenophylla*)

Tree 17 m. tall, 8 cm. thick,
fls. white, fleshy, very
-fragrant. (bark sample)
clump of sprouts
"cortina fina"

12 cm thick near base,
small tree, damaged above, sterile,
leaves dull above, turning
red when old. (bark sample).

herbaceous vine climbing
over brush, flowers green
leaves venose beneath
- sprout 3 m. tall,
leaves unusually large,
dull above

large tangled herb
with a bitter oily odor like
Conium maculatum,
flowers green, fruits
immature

- sapling 5 m. tall, 5 cm.
thick, leaves dull
above.

- tangled recumbent herb,
flowers magenta, nutlets not
quite mature red-marcescent, ^{strongly} aromatic.

22738 *Cinchona pubescens*
edge of opening

L 39

in thicket overhanging trail
40 *Saurauia* ~~terrestris~~ *Slumer* var. *poligantha*
~~along~~ *Saurauia* Seejant's Paratype
along trail, only one seen.

41 *Begonia*

common in shade

L 42 *Burmeistera*

rare in thickets overhanging trail, ~~red~~

L 43

rare in undergrowth

44

rare in undergrowth

tree partly dead, 15 cm.
thick, top damaged, sprout
5 cm thick, 6 m. tall from
near base. (specimen and
bark from sprout) leaves
dull above, turning
red when old. Plant
sterile. (bark sample)

elongate shrub,

flowers orange-vermillion

small shrub 1 m. tall,

fls. white.

fleshy stems, leaves
green above, red-purple-
bronze beneath, peduncles

& pedicels red, flowers
vermillion, fruit

green with edgings
of red.

elongate purplish,

green shrub, flowers

orange green, lower

lip lighter, muscat odor.

fruit inflated (fruiting
and flowering ~~specimens~~

from different plants)

elongate shrub,

fls. scarlet-vermillion.

~~small~~ shrub, single

stem 8 dm. tall, leaves

velvety dark green

above, maroon beneath,

venose beneath, calyx

yellow, corolla pale yellow

red tipped.

22745

L

in shade, occasional

46 Chusquea

abundant over most of area, especially in openings

47 Chusquea

Feb. 4 Rio Dandayacu, bet.
Rio Moray and Rio Jubal,
north side of Rio Pante, 37 km.
e. n.e. of Azogues, Prov. Cañar
deep wet wooded ravine 8000'

48

thicket above trail

49 Cinchona

Feb. 5 - Huertasparmbas, n.
slope of canyon of Rio Pante
bet. Rio Moray and Rio Moray, 35 km.
e. n.e. of Azogues, Prov. Cañar

Vaccinium

~~Vaccinium~~

erect, usually single
stemmed suffrutescent
herbs, leaves sometimes
purplish beneath,
flowers scarlet.

Forming tangled brake-
up to 6 m. or more deep,
high arching canes as
much as 5 cm. thick, solid.

Only one plant seen fertile.
#22747 represents a nearly
sterile one.

sterile plant corresponding
to #22746. same data.

elongate shrub, flowers
vermillion.

sapling, sterile. ~~Coffea~~
leaf texture of *C. pubescens*
of region, but shape and ~~shape~~
of pubescence wrong. *C.*
officinalis "Costona fina"
growing on slope above.

leaves stiff,
shrub 1.5 m. tall, ~~small~~ flowers
in cluster of three, corolla ~~red~~
not paler at tip, dull without.

22791 *Vaccinium*

in wetland, steep open slope

Feb. 5 - Santo Tomas, steep
wall of valley of Rio Masar
opposite library, 26 km. N
of Azuay, Prov. Canar 7500-8000
cleared land with brushy
patches, fence-rows and trail
sides

with
F. Puelo52 *Hedyotis*no plant seen, rocky cat above
trail53 *Acalypha*

occasional in brush

54

very common in brush

55 *Vaccinium*rocky steep slope, *Arctostaphylos*56 *Lantana*

common in brush

57

common in brush

58 *Tournefortia*

common in brush

59 *Rubus*

common in brush

60 *Lagu*

occasional in brush

shrub 1.5 m. tall, leaves
leathery, flowers deep
coral red turning distally
to deep dull purple.
lustrous without, less so
toward tips.

(collected from house while
riding along trail so ^{not} ~~not~~
always from same plant)

buds with pink tinge,
fls. white.

weak shrub up to 1 m.
tall.

shrub up to 2 m. tall,
flowers opening deep
yellow, turning deep orange.

shrub about 1 m. tall,
fls. deep coral, lustrous
without, less so toward tips.

shrub up to 1.5 m. tall,
flowers magenta-purple.

shrub up to 2 m. tall,
fls. deep purple.

shrub up to 2 m. tall,
fls. whitish.

arching and scrambling
canes, fls. pink, fruit
turning black.

shrub, fls. bluish

9000'

~~7500'~~

7500'

22761 *Tibouchina*
common in brush

Feb 4 - Valley of Ventanillas,
small affluent of Rio Masar
south west of Shray, 33 km.
n.e. of Azogues. Prov. Cañar
wet wooded slopes, somewhat
disturbed 9500-10600'

62 *Galium*
in brush along trail

63 *Solanum*
thicket along trail

64 *Stellaria*
tangled in thicket along trail

65
thicket along trail

66 *Palicourea*
undergrowth

67 *Galium hypocarpium*
thicket along trail

68 *Galium*
thicket along trail

69 *Solanum*
very opening, rare

70 *Viola*
common throughout region
from 8000' - 10400'

7500' shrub 1 m. tall, flowers
deep royal purple.

herb, roots yellow, fruit
green.

small shrub, tangled in
brush, fls. yellowish, dark
inside, fruit green.
fls. white

elongate, sparsely branched,
stems glossy, deep purple-
brown, flowers orange with
yellow lobes.

shrub 1 m. tall, fls.
greenish white, fruit
black when ripe, mostly
immature. Corolla tube
not enlarged at base.

climbing in bushes,
fruit orange, fleshy.
tangled in bushes
fruit not fleshy.
weeds herb, fls. lavender.

vine-like, climbing in
trees to 3 m. Plants observed
flowering when 15 cm tall,
flowers scarlet.

- 22771 *Oenothera*
weed along trail in opening
- 72 along trail on earth bank
- 73 *Manettia*
in thickets along trail
- 74 *Galium*
earth bank along trail
- 75 *Fuchsia*
thickets along trail, not common
- 76
thickets along trail

Feb. 5 - Top of ^{pass on line connecting} ridge east of
Rio Dudas, directly opposite
Pindilie, 3.5 km. n.e. of Azogues,
brushy windswept crest
and slopes. 10600' Prov. Cañar

- with
F. Pringle
- 77 *Lycopodium clavatum* L.
vertical earth banks above trail
- 78
vertical earth banks
- 79 *Blechnum*
very common on vertical banks
and trail sides
- 80 *Lycopodium*
vertical earth banks above trail
- 81 *Blechnum Eriodorum superlanceolatum* (L.) Kuhn
along trail det. Fagon 1970
- 82
vertical earth banks

- flower red at base of
- petals, tips yellow.
- prostrate, fls. yellowish
- greenish
- vine, fruit immature,
no veins visible on under side of
leaves.
- prostrate, fruits greenish
- shrub up to 2 m. tall,
- fls. pendent, bright red
- weak shrub up to 2 m.
bracts white, fls. white.

- extensively creeping,
- rooting, spikes erect.
- fronds erect

young leaves reddish.

- extensively creeping,
- spikes erect.
- trunk erect 3 dm. high
young fronds erect, others
ascending, stiff, dead fronds
- lying on ground, detached.
- flat against soil

22793 *Brunellia*
occasional in scrub

84 *Vaccinium*
occasional in scrub

Feb. 5 - across the valley of
Rio Mangan from Taday,
29 km. s. e. of Azogues, Pr. Cañar
roadside in cleared cultiva-
ated country

85 *Calceolaria obtusa* Molau det. Molau 1982
dry banks and wet muddy areas

86 *Hedyotis*
dry banks

87 *Calceolaria*
roadside

88 *Loasa*
dry bank

89 *Drymaria*
marshy place

90 *Carex*
marshy place

91 *Carex*
marshy place, in one
spot excluding other
plants

92
common in brush patches
and along trails

small tree 5 m. tall, dense.

flowers coral red, somewhat
paler at tips, surface dull.

fl. butter yellow.

fls. deep yellow.

diffuse scrambling
plant with painfully
stinging hairs, petals
white, nectaries or stamens
deep yellow with 2 transverse
red bands.

diffuse, petals white,
half again as long as calyx,
deeply bifid.
dense tufts

erect

shrub 1.5 - 2.5 m. tall,
fls. bright rose, pendent.

with 7. Pineda
Feb. 5 - Flats ^{and slopes} ~~along~~ headwaters of
Rio Mangan 20 km. n.e. of
Azogues, Prov. Cañar 10800'
semi-open brush and open slopes

22793

Valeriana

94

Viola

open ~~flat~~ flat ground

95 Hedysotis capitata

96 Barnarea

97 Hedysotis

rare, on tops of cut banks

98 Lobelia

openings and tops of cut banks

99 Blechnum

common on eroded banks

100 Lycopodium

rare, vertical banks, eroded slope

01 Eryngium humile

common on open slopes

02 Nertera granadensis

rare in open turf

03

04 Gleichenia

very common on banks

05 Valeriana

common on open slopes and banks

06 Hymenophyllum

common locally on vertical bank

- bush 2 m. tall, fls. white.
prostrate, fls. purplish,
deepest near apex, with
dark lines on lower petal.

- leaves thin, convex below,
concave above, fls. white,
purplish without.

- flowers vermillion with
green tips.

- small cushions, flowers
rare, white purple without.
fls. purplish.

bronzegreen, quadrangular

varying in stature, none
seen as ~~as~~ ~~as~~ ~~as~~
short scaped as common in Colombia.
prostrate, fruits orange, and
very small (probably abortive).
stones 2, adherent.

- fls. purple
fronds erect, stiff.

erect, fls. white.

rhizome glaucous.

- 03 *Pinguicula*
vertical banks of spring
- 09 *Polygonum*
common in open places
- 10 *Vaccinium*
common very locally on
vertical banks
- 11 *Gaultheria*
open places
- 12 *Phycopodium*
vertical eroded banks
- 13 *Azorella*
open places
- 14 *Vicia*
along stream
- 15
along stream
- 16 *Thalictrum*
along stream
- 17
along stream
- 18
along stream

Feb. 5 - Headwaters of Rio
Shirineay, west slope
of Cerro Huairacaja, 10 km.
n.e. of Azogues, Prov. Cañar
Partially brushy, partially cleared

19 *Weinmannia*

- fls. violet
leaves thin, yellow-green,
involute, fls. purple
with margins fading
to white
prostrate, fls. reddish
green.
- prostrate, corolla bright
rose, fruit translucent
white, soft, at first pleasantly
acid, then bitter to taste.
- prostrate, fls. pink,
fruit black.
- fronds erect.

forming thick cushions

flowers violet.

flowers violet

fls. blue-violet.

erect herb

10300'
slopes

tree 6 m. tall

- 22770 *Chusquea*
abundant on open slopes and
tangled in brush

~~22771~~

21

brushy roadside

22 *Nertera granadensis*

steep bank of black soil

23 *Protea*

brushy roadside

- Feb. 5 - day bet. upper
Rio Chimera and upper
Rio Saray. n.e. of San Marcos,
3 km. n.e. of Azogues,
Prov. Cañar
cleared slopes, partly regrown
to brush 1000'
- 24 *Cinchona*
open slope

Plant 1.5 m. tall, canes
arching, not all of
population flowering.
this plant the highest
observed flowering, others
sterile higher on slope,
further down flowering
more commonly.

fls. & bracts white.

10 10

10 10

(photo)

prostrate, trailing, fruits
red, juicy, with 2 stones.
shrub 3 m. tall, leaves
gray-glaucous beneath,
flowers white, corolla
~~turning~~ (or staminal column)
turning pinkish, fruit
clusters in lower part
of branches.

stump with dense
clump of sprouts 2 m.
tall, scarcely fruiting, leaves
smaller than in 22725. (same
tree as Camp 1815). fruits
reddish-brown, leaves
glossy. "Guato de gallinaza blanca".

22875 *Cinchona*

open slope

Same but Feb. 3

26 *Cinchona*

open slope

Feb. 2 - Headwaters of Rio
Shirinay, west slope of
Cerro Huainacaja, 10 km. n.e.
of Ayogues, Prov. Cañar

27 *Hedyotis capitata*

rocky bank with small bushes

28 *Galium hypocarpium*

rocky bank

Feb. 5 - Rio Shirinay 5 km.
n.e. of Ayogues, Prov. Cañar

29 *Hedyotis*

30

31

(photo)

stump with ^{dense} clump of
sprouts, heavily fruiting,
scarcely flowering. Leaves
glossy, larger than in 22875.
Fls. purple. Fruit bronze-
red. Leaves turning bright
cinnamon when old. "Pato de gallinazo
blanca." ~~Same tree as~~ same tree as
Camp 21817.

small tree or developed
sprout 4 m. tall, leaves
deep green, glossy, above,
pale and less glossy
below, when old turning
deep red. Corolla purple.
hairs brownish-gray.
"pato de gallinazo blanco."

10500'

erect shrub 3 dm. tall,
leaves keeled, fls. in terminal
clusters, buds pale lavender,
corolla almost white.

10500'

creeping, fruits bright
orange, fleshy

Three different plants, or more
or less erect but with main woody
stem prostrate, others pendent from
bank, fls. white

with
M. A. Giller
to 2200'

Feb. 8 - Tablon de Oña, slope to south, 3 km.
s. of Oña, Prov. Azuay 2500'

22837 *Euphrea*

Common on open slope

Feb. 8, Oña, ~~along~~ ^{Cayambe} Rio Oña, Prov. Azuay 7600'

33 *Hedyotis*

crumbly ledges of earth and decomposing rock.

Feb. 8, - Hacienda Zumbiel, 2 km.
s. of Santa Rosa, s. end of Cordillera
Alpachaca, Prov. Azuay 9700'
slopes covered with low brush

34 *Befaria*

35 *Vaccinium*

36 *Linum*

37 *Vaccinium*

38

39 *Befaria*

40 *Befaria*

41 *Vaccinium*

42 *Lycopodium*

43 *Hedyotis*

abundant

44 *Vaccinium*

Feb. 8 - Mudo (Paramo) de Tinajillas,
32 km. s. of Cuenca, Prov. Azuay 10300'

Grassy slopes

45 *Galium hypocarpium*

46

47 *Gnaphalium*

48 *Hedyotis capitata*

49 *Gentiana*

50 *Luzula*

rocky roadcut

flowers magenta, calyx
brick red.

dwarf shrub, fls. white
leaves glossy, pale beneath.

"Pazami" dwarf shrub, fls. rose, somewhat viscons.
low shrub, leaves stiff, fls. dull coral red.

flowers yellow.
low shrub, fls. dull coral, pale toward tip, stiff.

fls. dull, dirty pink, adhe. brown ^{viscous} ~~stiff~~.

small shrub, fls. rose, buds viscons.

small shrub, fls. rose, buds viscons.

shrub 2-3 dm. tall, fls. pinkish, fruit globose.

branchlets much compressed.

(photo) prostrate to erect, young stems reddish
purple, fls. white flushed with
the palest lavender. longistylous, ^{several} ~~plants~~.

low shrub, fls. dull coral. note ^{older} ~~leaves~~ ^{leaves} ~~globose~~.
fruit reddish black.

prostrate, fruit fleshy, orange.
fls. lemon yellow, inv. blackish-green.

upright herb. ^{anthers purple} ^{buds purple}

lvs. concave & channelled above, fls. white, longistylous.

erect, fls. bright yellow with part of red outside.
~~erect~~ caespitose, branches
invol. pendulous.

22351 *Nertera granadensis*52 *Geranium*53 *Hedyotis*54 *Stellaria*55 *Stellaria*

Feb. 8 - Loja, Prov. Loja 7000'

Along banks of river

56 *Salix Humboldtii* (diffuse form)57 *Salix Humboldtii* (diffuse form)58 *Salix Humboldtii* (diffuse form)59 *Baccharis*60 *Antennaria ambrosia*61 *Alnus*

Feb. 9 - Paso de Cajanuma, 8 km. S of

Loja, Prov. Loja

8000'

brushy ridge

62

63 *Weinmannia*64 *Weinmannia*

65

66

67 *Valeriana*68 *Vaccinium*69 *Weinmannia*70 *Viola*

abundant on cleared slopes.

71 *Befaria*72 *Moravina*

73

73

on rocks

Feb. 9 - Headwaters of Rio Yamora, 8 km.

S. of Loja, Prov. Loja

N. slope Paso de Cajanuma

greenish, fr. orange-red, 2 stamens.

yish green, fl. white

white, slightly purplish ^{longer} withers

etc, pale green, fl. white.

te, pale green

Celastrum affine Nees

22725

m. tall, prostrate catkins

m. tall, stamens catkins

m. tall, fruiting

2 m. tall, diffuse, fl. white

tangled aromatic herb.

4. tall, leaves ^{greenish} glaucous

tree shrub, fls. pinkish orange.

m. tall, fls. reddish, stamens white

m. tall, fls. rose, stamens white

- shrub 2 m. tall, fls. white

vine climbing in ^{fruit} fl. dull vermilion, ^{anthers red}

- fruit indehiscent when dry (lost.)

- vine, fls. minute, white, fruit green.

- shrub 1 m. tall, fls. lustrous, ^{green} red with ^{yellow} pale

- shrub 3-4 m. tall, fls. greenish, stamens white

- herb up to 1 m. tall, rooting at nodes,

- fl. scarlet.

- shrub 1.5 m. tall, leaves glaucous beneath.

- erect shrub 2 m. tall, fls.

- indigo-purple, fruits maroon (young).

- caespitose, flowers scarlet.

22851 Nertera gran

52 Geranium

53 Hedysotis

54 Stellaria

55 Stellaria

Feb. 8 - Loja

Along bar

56 Salix Humboldt

57 Salix Humboldt

58 Salix Humboldt

59 Baccharis

60 Antennaria

61 Alnus

Feb. 9 - Pasado

Loja, Prov. Loja

brushy ridge

62

63 Weinmannia

64 Weinmannia

65

66

67 Valeriana

68 Vaccinium

69 Weinmannia

70 Viola

abundant on cleared slopes.

71 Beparia

72 Monarda

73

73

on rocks

Feb. 9 - Headwaters of Rio Zamora, 8 km.

S. of Loja, Prov. Loja

63-108	DATE
TIME	

NO. EXT.	
IS WAITING TO SEE YOU	<input type="checkbox"/>
WISHES AN APPOINTMENT	<input type="checkbox"/>

YOU WERE VISITED BY	
---------------------	--

7000'

2 of

- Prostrate, fls. greenish, fr. orange-red, 2 stamens.
- leaves grayish green, fls. white
- prostrate, fls. white, slightly purplish ^{longer} with
- prostrate, pale green, fls. white.
- prostrate, pale green

- tree 10 m. tall, pistillate catkins
- tree 8 m. tall, staminate catkins
- tree 8 m. tall, fruiting
- shrub 2 m. tall, diffuse, fls. white.
- low, rather tangled aromatic herb.
- tree 10 m. tall, leaves ^{greenish} glaucous

- erect aromatic shrub, fls. pinkish, orange
- shrub 1.5 m. tall, fls. reddish, stamens white
- shrub 2 m. tall, fls. rose, stamens white
- shrub 2 m. tall, fls. white
- vine climbing in ^{thicket} fls. dull vermilion, ^{anthers red}
- fruit indurulent when dry (^{only one can} eat)
- vine, fls. minute, white, fruit green
- shrub 1 m. tall, fls. lustrous, ^{green fls.} red with pale
- shrub 3-4 m. tall, fls. greenish, stamens white
- herb up to 1 m. tall, rooting at nodes,
- fls. scarlet.
- shrub 1.5 m. tall, leaves glaucous beneath
- erect shrub 2 m. tall, fls.
- indigo-purple, fruits maroon (young).
- caespitose, flowers scarlet.

22851 *Nertera granadensis*52 *Geranium*53 *Hedyotis*54 *Stellaria*55 *Stellaria*

Feb. 8 - Loja, Prov. Loja 7000'

Along bank of river

56 *Salix Humboldtii* (diffuse form)57 *Salix Humboldtii* (diffuse form)58 *Salix Humboldtii* (diffuse form)59 *Baccharis*60 *Antennaria ambrosia*61 *Alnus*

Feb. 9 - Páase de Cajanuma, 8 km. S of

Loja, Prov. Loja

3000'

Brushy ridge

62

63 *Weinmannia*64 *Weinmannia*

65

66

67 *Valeriana*68 *Vaccinium*69 *Weinmannia*70 *Viola*

abundant on cleared slopes.

71 *Befaria*72 *Moravina*

73

73

on rocks

Feb. 9 - Headwaters of Rio Yama, 8 km.

S. of Loja, Prov. Loja

N. slope Páase de Cajanuma

Prostrate, fls. greenish, fr. orange-red, 2 stamens.

leaves grayish green, fls. white

prostrate, fls. white, slightly purplish ^{longer} ~~with~~

prostrate, pale green, fls. white

prostrate, pale green

tree 10 m. tall, pistillate catkins

tree 8 m. tall, staminate catkins

tree 8 m. tall, fruiting

shrub 2 m. tall, diffuse, fls. white

low, rather tangled aromatic herb.

tree 10 m. tall, leaves ^{some} ~~glaucescent~~

erect aromatic shrub, fls. pinkish orange

shrub 1.5 m. tall, fls. reddish, stamens white

shrub 2 m. tall, fls. rose, stamens white

shrub 2 m. tall, fls. white

vine climbing in ^{fruit} fls. dark vermillion, ^{anthers red}

fruit indehiscent when dry (only one can)

vine, fls. minute, white, fruit green.

shrub 1 m. tall, fls. lustrous, red with ^{green} ~~yellow~~

shrub 3-4 m. tall, fls. greenish, stamens white

herb up to 1 m. tall, rooting at nodes

fls. scarlet.

shrub 1.5 m. tall, leaves glaucous beneath.

erect shrub 2 m. tall, fls.

indigo-purple, fruits maroon (young).

caespitose, flowers scarlet.

- 22374 rocky, bushy slopes 7000'
- 75 *Claphrocoelum*
- 76 *Galium hypocarpium*
- 77 *Hedyotis*
- 78 *Hedyotis*
- 79 *Stellaria*
- 80 *Cinchona officinalis* L.
in brush.
- Feb. 9 - S. slopes of Nudo de Cajanuma,
above Pueblo Nuevo, opposite Cerro Uritzinga,
11 km. S. of Loja, Prov. Loja 7500-7600'
cleared slopes with brushy ravines:
- 81 *Pyracantha*
- 82 *Vallea stipularis*
- 83 *Galium*
- 84 *Galium*
- 85 *Stellaria*
- 86 *Cinchona officinalis*
- 87 *Drymaria*
cultivated fields as weed common
- 88 *Hedyotis*
fence rows and pastures common
- 89 *Cinchona officinalis* L.
- 90 *Oenothera*
- 91 *Cinchona officinalis*
open clearings
- 92 *Cinchona officinalis*
- 93 *Cinchona officinalis*
- 94 *Vallea stipularis*
- 95 *Cinchona officinalis* L.
brushy ravine
- 96 *Zanthoxylum*
edge of brush

- leaves stiff
- prostrate, roots yellow, fruits orange, fleshy.
- aromatic shrub, fls. pinkish orange.
- dwarf shrub, fl. white, (from several plants)
- fls. white.
- 7750' - fls. white
- 7750' - sprouts up to 1 m. tall,
leaves thin, not flat, veins prominent
- common name "fine" - clumps of sprouts and small trees 4-6 m. tall and no more than 3 cm. thick, ^{of *Cinchona officinalis*} common, but bark had been taken from all.
- shrub, lvs. venulose beneath, veins impressed above, fruit green.
- small tree, flowers pink.
- aromatic shrub 2 m. tall, flowers pinkish-orange.
- tangled in bushes, fls. greenish-white.
- fls. and fruits greenish.
- fls. white.
- small tree 6 m. tall, partly peeled, prostrate, flowers white.
- petals bifid, $\frac{1}{3}$ longer than sepals.
- fls. white.
- small tree 4 m. tall, leaves ^{fls. deep crimson} tending to be irregular rather than plane.
- fls. rose pink.
- sprouts, each from different leaves not
- leaves turning brown when old. - clump, to show variation. flat.
- vine climbing in trees, flowers with kind purple
- tree 5 m. tall, leaves thin
- small tree, fls. rose, fruit green, covered with fleshy tubercles.
- small tree 6 m. tall, 3 cm. thick, leaves thin, fls. crimson-pink, odorless.
- single woody stem 1 1/2 m. tall, fruits green.

27398 *Cinchona officinalis* L.

open slope

99 *Hypoxis*

trampled pasture

22900 *Hypericum*

trampled pasture

01 *Bocconia frutescens*

Feb. 9 - Valley of Malacatos s. of Malacatos
(Valladolid), 15 km. s. of Loja, Prov. Loja
dry slopes covered with *Acacia*, *Annona*, etc.

02

03 *Solanum*

04

abundant

05 *Oxalis*06 *Tribulus terrestris*07 *Heliotropium*

08

09 *Annona cherimolia*

abundant part of vegetation

10 *Annona cherimolia*

wild, abundant in vegetation

11 *Croton*

common

12 *Euphorbia*

common

13 *Mirabilis*

Feb. 9 - Landaqueni, 6 km. n. of
Malacatos (Valladolid), 20 km. s. of Loja, Prov. Loja

14

15 *Nicotiana glauca*

16

small gnarled, partially
potted tree, fls. deep crimson pink, odorless.
fls. yellow

fls. orange yellow plant
- not even eaten by goats.
bush 2.5 m. tall, orange latex not abundant, ^{fruit} ~~prickly~~.
inflorescence apparently terminal

5200'

bush 2 m. tall, fls. yellow, fruit red.

bush 1.5 m. tall, fls. white, anthers orange, ^{all on one side}

shrub 1-2 m. tall, receptacle

~~howl~~ - shaped, single petal white, ^{stamens} many.

bush up to 1 m. tall, fls. yellow

fl. yellow.

- suffrutescent herb, fls. white.

5500' ~~tree~~ vine, fls. purple, reputed to be poisonous.

5300'

spreading tree 5 m. tall, ~~fls.~~ leaves
somewhat fragrant when crushed, fls.

with petals fleshy, fruit dry on tree

5500'

small tree 4 m. tall, as above

except fruits not ripe yet.

shrub 1 m. tall.

fls. rose pink

leaves thin, infl. sticky, fls. crimson

shrub, fls. purple

herb 1 m. tall, fls. pink (said to be no good as tobacco)

erect, fls. violet.

Feb. 10 - Tenace 11 km. w. of Loja, P. M.
steep slope above road 7800-7900

22917

18

19 Hedysotis

20 Hedysotis

21 Agave

valde, used for fence-rows ("penco negro"
used for fence-rows)
also for stock

22 Passiflora

roadside brush

Feb. 10 - Nudo de Villonaco, just west of d. d.
low-brushy slope

23 Cecremin

24

Feb. 10 - e. side of Catamayo Valley,
3 km. e. of Catamayo (La Toma), P. M. Loja.
dry brushy slope with acacia, cotton + 77904.

25

26 Comp.

27 Capparis

"sapote de gorma"
cut fruit smells like water

28

29 Ayenia

30 Eulovulus

same 2 km. e. Catamayo 5000

31 Heliotropium

(from several
plants)

32 Nicotiana

Feb. 10 - Rio Guayabaz, 5 km. n.-w.
of Catamayo (La Toma), Catamayo Valley, P. M. Loja.
dry, brushy, thorn-forest plat. 4750

33 Capparis

34 Capparis

leaves stiff, not fleshy, calyx ^{corolla pale pink} ~~pink~~
- fl. white, greenish outside, ^{ly. marked} ~~marked~~
- small bush, flowers white, longistylous
- same, brevistylous.
- rosette of great, fleshy, bluish
leaves, erect stalks from center.
- vine, fl. greenish, coronat ^{stamens} ~~stamens~~ white

- fl. bluish, fruit green
- fls green.

5500'

- fls. yellow
(photos) - small gnarled tree. gum from
cuts in bark and fruits used
for sizing hats and mixing with whitewash.
- bush, fls orange.
- fls. red.
- fls. white.

shrubs. white very fragrant. looks
and smells like H. anomalum.

Also shows same variation in corolla
erect herb, 1 m., sticky, footed, ^{stamens} ~~stamens~~

low spreading tree, stamens white
same

22935

36 *Tabularia*

37

38 *Bourhaavia*39 *Euphorbia*40 *Celtis*

Feb. 10 - near San Pedro, 10 km. n. w.

Catamayo (La Tona), Prov. Loja 5500'

41 *Evolvulus*

dry rocky slope

Feb. 10 - n. e. slope of Cerro Matapero

3 km. s. w. San Pedro, 10 km. n. w. of

steep dry slope of decomposed slate

42

43 *Passiflora*44 *Begonia*45 *Galium*46 *Senecio*47 *Cantua*

48

49 *Dodonaea viscosa*50 *Hedyotis*51 *Lupinus*52 *Drymaria*53 *Dodonaea*54 *Solanum*55 *Gomphrena* *peruv.* n. w. of

Feb 10 - near San Chinchas, s. w. slope

of Cerro Matapero, 14 km. s. of Catamayo,

moist foggy brushy slope 4300'

56

57 *Stellaria ovata*58 *Stellaria*59 *Heliotropium*60 *Adiantum*

- fl. pale yellow.

- prostrate fls. yellow

- prostrate, fls. straw-color.

internodes with viscous band, fls. red.

low, broadly spreading tree 6 m. tall.

prostrate, flowers blue.

Catamayo, Prov. Loja.

steep shale, 7500'

vine, fls. dark purple.

- vine, fls. rose, ~~at base~~ ^{at base}

- fl. rose without, white within

- tangled in bushes

- fls. yellow.

- shrub 1 m. tall.

- rounded shrub 1.5 m. tall.

- erect shrub, 1 m. tall.

- fls. white.

- lactiferous rigid shrub 2-3 m. tall, fls. yellow.

- grayish leaves, petals white, bifid, ^{anthers} ~~calyx~~

- low shrub (probably an aberrant plant).

- shrub, flowers purple.

- heads narrow - black.

(La Tona) Prov. Loja.

- stem fleshy, panicle white.

- diffuse-prostrate, fls. white.

- prostrate, fls. white.

- shrub 1 m. tall, fls. white

young leaves reddish.

Feb. 10 - Rio Chiguango, just
above Chiguango, 13 km. ^{W. of}
steep canyon wall, rather dry

22961 *Hamelia patens*

62 *Antennaria*

Feb. 10 - Headwaters of Rio Salado, ^{W. of}
of Catamayo (La Toma) Prov. Loja
steep slope, rather dry

63 *Adiantum*

shade of great rocks

64 *Rondeletia*

65 *Polygala*

66 *Lantana*

67

shade of great rocks

Feb. 10 - Rio ~~Chiguango~~ near Puente ^{F. P.}

10 km. ^{South} of Patate, Prov. El Oro 2000'

68 *Crotona* *Coutarea hexandra*

crumbly bank above river

Feb. 11 - Monos, 17 km. ^{W. of}

wet forest on steep slope

69

70 *Psychotria*

71

72 *Guetarda*

73 *Hedyosmum*

74 *Palicourea*

75 *Psychotria*

76 *Palicourea*

77 *Burmeistera*

78 *Cephaelis*

79 *Burmeistera*

80 *Cephaelis*

common

of Catamayo (La Toma) ^{Prov. Loja}
3500'

shrub, fls. orange, ^{with} fr. black.
roots orange, fls. very white.

km. N. N. W.

young fronds reddish.

shrub, fls. deep rose without, ^{within} pale pink
fls. ^{large} purple, roots smell of wintergreen.
shrub, m. tall, fls. and fruits lavender.
fls. white.

shrub 2 m. tall, flowers
white, ^{colorless}.

Patate, (near Zamana), Prov. El Oro 4000-4500'

fls. white, fruit orange, fleshy.

unbranched shrub, m. tall, fls. white.

shrub 2 m. tall, fls. white

leaves glaucous beneath

widely spreading tree, fls. white, ^{lobes} ^{deep} ^{red} ^{edges} ^{deep} ^{red}

shrubs or small trees, aromatic, fruit white, fleshy.

elongate shrub, infl. orange, fruit green.

erect unbranched shrub, fls. & fr. white

elongate, scrambling shrub,

fls. & infl. orange, (infl. reddish).

vine-like, bud maroon, fruit bright blue.

unbranched shrub, m. fr. immature

vine-like, fruit magenta.

branched shrub, fruit immature

- 22931 *Palicourea*
 32 *Psychotria*
 33 *Psychotria*
 34 *Chusquea*
 35 *Cephaelis*
 36 in trail
 37
 38 *Fuchsia*
 Feb. 11 - La Garganta de Pinas,
 w. of Pinas, El Oro
 39 road cut
 Feb. 12 - ^{below} Curtinca, 3500'
 3 km. e. of Portovelo, Prov. El Oro
 brush along trail
 40 *Psychotria*
 Feb. 12 - Curtinca, 10 km.
 e. of Portovelo, Prov. El Oro
 41 *Cinchona pubescens*
 bushy roadside
 42 ~~Cinchona~~
 43 *Emmenanthe*
 bushy roadside
 44 *Cinchona pubescens*
 bushy woods
 Feb. 12 - ridge between El Mudillo
 + Hacienda Chapel, 20 km. e. Portovelo, Prov. El Oro
 45 *Cinchona*
 bushy ridge
 46 *Cinchona*
 bushy ridge

- greenish-yellow.
 scrambling shrub, fls. & infl.
 erect unbranched shrub 1 m., fls. & infl. blackish green
 branched shrub 2-3 m. tall, fls. greenish white.
 climbing in trees, two clusters seen, both flowering.
 unbranched shrub, 1 m. tall, fl. white.
 fl. white
 erect herb, fls. purplish
 fl. vermillion, no stipules
 flower white, lip yellow
 within, very fragrant.
 fls. white
 4800' sprouts 1 m. tall.
 4800' vine-like, fls. white
 4800' small tree, 5 m. tall, 5 cm. thick,
 or cluster of green fruit (Bark sample)
 4800' sapling 1.5 m. tall, sterile
 4800' sapling 3 m. tall, sterile

Feb. 12 - Hacienda Chapel, Hacienda
Chapel, 22 km. s. of Portovelo, Prov. El Oro
Open burned-veg slopes

- 22996 *Hedyotis capitata*
97 *Hedyotis capitata*
98 *Vaccinium*
99 *Hedyotis* *canadensis*
23000 *Hedyotis*
01 *Cinchona*

slope with scattered small trees

- Feb. 13 *Cinchona*
03
04 *Escallonia*
05 *Cinchona*
low wet woods.

Feb. 13 - Babaderos de Oro, affluent
of Rio Guis, reg. called Tumbalán map
s. of Hacienda Chapel, 22 km. s.
of Portovelo, Prov. El Oro
steep wooded sides of ravines

06 *Cinchona*

07 *Hedyotis*

open ^{cleared} slopes, scattered low brush

08 *Cinchona*

Feb. 13 - Hacienda Chapel, 22 km.
s. of Portovelo, Prov. El Oro

09 *Hedyosmum*

- 9000' fls. white, longistylous
" fls. white, brevistylous
9100' depressed, fls. bright rose pink, ^{sepals black.}
8900' prostrate or almost so, ^{longistylous}
9200' prostrate or almost so, ^{brevistylous}
7700' small tree 4-5 m. tall, rounded,
several stems 10 cm. thick, fls.
deep crimson, odorless, fruit
reddish, (bark sample)
9200' aromatic, fls. cream-white.
9200' shrub 1.5 m. tall, fls. yellowish, style purple.
9000' shrub, fls. lavender, stamens white.
8900' small tree 4 m. tall, 6 cm. thick,
flowers maroon, lvs. glossy.

- 7900' tree 20 cm. thick, 12 m. tall,
fls. maroon but with green
basal 1/4, tube hairy within, odorless
7700' ~~open slopes~~, fls. white

- 7500' tree 30 cm. thick, 18 m. tall
fls. maroon, greenish
toward base, tube hairy within,
odorless, lobes hairy on entire inner surface

- 9200' aromatic shrub, fruit
green, used for tea. "Huasca"

Feb. 13 - El Nudillo, ridge 18 km. e.
of Portovelo, Prov. El Oro

23010 *Diospyros*

very common in low wet woods

11 *Pinguicula*

sides of deep trail - cut, in dripping fog forest

Feb. 13 - Between Curtinca and
Mediamontana, 12 km. e. of
Portovelo, Prov. El Oro

12 *Cinchona pubescens*
wet woods

Feb. 13 - El Tablon, 6 km. e. of Portovelo, Prov. El Oro

13 *Guadua*

near houses, possibly planted

Feb. 14 - Grade east of Catamayo
(La Toma), Catamayo Valley, Prov. Loja
dry bushy slope with mostly legumes & cacti

14 *Euphorbia*

15 *Croton*

dominant in vegetation

16 *Sida*

17 *Baccharis*

18

common

Feb. 14 Cruz Loma, Alto de Villanaco,
6 km. n. of Loja, Prov. Loja
steep ridge with low bush and open slope

19 *Hedyotis*

20 *Cynoglossum humile*

21 *Plantago*

22 *Weinmannia*

9000'

tree 4 m. tall, fls. white
waxy, old leaves turning red.
leaves pale green, involute,

slender tree 6 cm. thick, 7 m. tall,
fls. crimson, deeper distally,
fragrant, (approaching c. officinalis
in appearance). Old leaves bright
red. (bark had been taken from lower part)

canes 3 m. tall, arching at top.

6000'

lactiferous, ribbed stems, fls. dark reddish
bush 1 m. tall.

fls. orange
fls. whitish, bush 1 m. tall.

bush 1.5 m. tall, fls. pink without,
white within, very fragrant.

9850'

various plants, shrubs 0.5-0.8 m., fls. white.

"

"

"

shrub 3 m. tall.

- 23023 Fuchsia
 24 Hedyotis
 25 Hedyotis
 26
 27 Orthosanthus chumboragensis
 28 Hedyotis
 29 Hedyotis
 30 Hedyotis
 31 Galium
 32 Galium hypocarpium
 33 Drymaria
 in opening
 34
 35 Weinmannia
 36 Fuchsia
 37 Hedyotis
 flat open top of ridge
 38 Hedyotis
 39 Ilex
 40 Ilex
 41 Ilex
 42 Hedyotis
 in bush
 43 Weinmannia
 44 Hedyotis
 in bush
 45
 white fls on mossy stems of bushes
 46 Viola
 prostrate on open ridge top.
 47 Hedyotis
 in bush
 48 Lycopodium
 49 Hedyotis
 steep open ridge

- 8900' shrub 1 m. tall, fls. vermillion.
 " shrub 0.6 m. fls. white.
 " shrub, prostrate, tip erect, fls. white.
 9100' shrub 1.5 m. tall, fls. yellowish.
 " erect, fls. pale blue-violet.
 " shrub 0.6 m. tall, fls. white.
 9400' shrub 0.8 m. tall, fls. white.
 9500' shrub 0.6 m. tall, fls. white.
 " prostrate, fls. & fruits green.
 " prostrate, fruits orange, fleshy.
 " decumbent, branches ascending, fls. white.
 " shrub 2 m. tall.
 9500' shrub 3 m. tall, buds only.
 " shrub tangled in others, fls. pendulous, variegated.
 9450' lvs. channelled above.
 fls. white, buds purplish.
 " ~~same data~~ same data.
 " dwarf shrub 3 dm. tall, fr. immature.
 9600' dwarf shrub, 2 fls. white.
 9700' dwarf shrub, 0 fls. white.
 " shrub 1 m. tall, fls. white,
 buds purplish.
 " shrub 2 m. tall, stamens white.
 " shrub 1 m. tall, leaves channelled
 above, fls. white, buds purplish.
 " fls. scarlet with dark
 red patch on top of middle of column.
 " prostrate, fls. purplish
 white, marked with dark purple trans-
 verses, esp. on lower petals.
 " bush 1 m. tall, lvs. channelled above, fls. white.
 " prostrate, branches erect.
 9600' compact, much branched shrub 3 dm. tall,
 lvs. channelled above, fls. white, buds purplish.

same - steep slope, low woods, - ^{with} ~~h.s. fls.~~

51 Valeriana

52

53

54 Euphorbia

55 Stellaria

56

57 Manettia

58 Psychotria

59 Lisyrinchium

60 Faramea

61 Heiracium

62 Manettia

Feb. 15 - Hacienda Guaycopamba,
Rio Guaycopamba (Rio ~~Guaycopamba~~)

20 km. S. Vilcabamba (La Victoria), Per. Lvs
flat bottom lands and slopes at sides.

vegetation generally thorn forest type, but bottom
lands with much ground water. 5700' - 5800'

63

rocky open slopes

64 Polygala

no day open slopes

65

flats along river, common

66

flats

67 Cinchona officinalis L.

flats

68 Cinchona officinalis L.

69

flats

70 Cinchona officinalis L.

flats, in opening

- fls. bronze-maroon -

- vine

- prostrate, fls. & fruits green.

- vine, fls. white.

- shrub, fls. green

- fls. white, stems succulent.

- shrub, fls. violet-blue.

- vine, fls. white.

- shrub, fls. white.

- fls. yellow.

- fls. white within, purplish without, ^{subtly pink black.}

- fls. yellow, involucre blackish green.

- vine, fls. white.

Cinchona officinalis here
and in the tributaries, such as
the quebrada Amarilla grows
in the flat, gravelly riverbeds
as well as on the lower brushy
slopes above them.

- canes erect, roots fleshy,

- fls. deep crimson-magenta.

- fls. purple.

- spreading tree, fls. yellow,

- fruits said to be edible. "sacha capuli"

- vine, fls. white

Tree 3 m. tall, leaves dull or ^{"united"}
slightly glossy (bark sample)

Tree 2.5 m. tall, fls. dull crimson

- spreading tree, fruits said to be

- edible "sacha capuli"

- small sapling, 2.5 m. tall, leaves

- semi-glossy "uritupinga"

23071 *Drymaria*

Feb. 15 - Quebrada Amarilla, ^{flat}
 affluent of Rio Guayasapamba 2 km.
 above Hacienda Guayasapamba, 22
 km. S. of Vilcabamba (La Victoria), Prov. Loja. 5300-6000'
 bottom of deep ravine along gravelly stream bed

72

open gravel flat

73 *Cinchona officinalis* L.

thickets at bottom of slope, edge of open gravel flat.

74 *Cinchona officinalis* L.

thickets at bottom of slope, edge of gravel flat

75 *Cinchona officinalis*

open gravel flat

76 *Lucuma*

thickets at base of slopes

77 *Cinchona officinalis* L.

open gravel flat

78 *Codonaea viscosa*

open gravel flat, very common

79 *Gaultheria*

open gravel flat

80 *Cantua*

open gravel flat, gravel flat, common

81 *Richardia*

open gravel flat

82

open gravel flat

83 *Tagetes*

opening in forest

84 *Tillandsia usneoides*

hanging from trees, common

shrub 2 m. tall.

small, ^{bent} tree 3 m. tall, 6 cm. thick.fls. crimson. somewhat fragrant
with vanilla-like fragrance

leaves rather dull, not plane.

sapling 3 m. tall, leaves

dull, not plane (bark rough)

sapling 2.5 m. slender leaves

dull, fls. dull crimson, odorless

spreading tree, somewhat

lactiferous, fruit edible "lucuma".

sapling 3 m. tall, dull, leaves

very irregular, red when

old. "Unituzings".

erect shrub.

shrub 2 m. tall, fls.
white.

shrub 1 m. tall.

prostrate

prostrate

odor like fennel, rays white.

pendent

- 23100 *Symbolanthus*
ridge with low brush
- 01 *Hedyotis*
- 02 *Myrsine*
- 03
- 04 *Lycopodium*
- 05 *Linum*
- 06 *Ecceum*
- 07 *Hedyotis*
- 08 *Hedyotis*
- 09 *Hedyotis*
- 10 *Hedyotis*
- 11 *Vernonia*
- 12 *Pellaea ternstroemia* rocky place
- 13 *Hedyotis*
- Feb. 19 - Upper Rio Zamora, trail to Zamora,
Cordillera Zamora, 9 km. s. of Loja, Prov. Loja
- 14 *Palicourea*
- Feb. 19 - Divide bet. headwaters of Rio
Zamora and Quebrada Jipim, Cord.
de Zamora 9 km. s. of Loja, Prov. Loja
- 15 *Cinchona microphylla*
common in dense brush on ridge
- 16 *Cinchona microphylla*
- 17 *Cinchona microphylla*
- 18 *Myrtus*
- 19 *Ardisia*
- 20 *Befaria*
- 21 *Hedyotis*
common on open, recently burned slope
- 22
- 23 *Cinchona microphylla*
- 24 *Puya*
common on burned open slope

- 9000' shrub up to 0.3 m. fl. rose, whitish
in throat, oblique.
- 9000' fls. white, buds purple.
- 9000' small tree, fls. whitish
- 9000' fls. pinkish white
- 9000' erect
- 3300' fls. yellow.
- 9000' fls. purplish blue
- 8500' fl. white
- 8000' fls. white
- 8000' fls. white
- 6500' fls. white, shrub 0.8 m. tall.
- 9000' fls. purple.
- 8000' tufts
- 8000' fls. white, plant prostrate
- 7200' shrub 1 m., fls. dull purple.
- 8500' shrub 1.5 m. tall
- shrub 1 m. tall.
- shrub 1.5 m. tall.
- shrub 1 m. tall, fls. white.
- shrub 1.5 m. tall, fls. whitish.
- shrub 1 m. tall, fls. pink "pazama".
- fls. white.
- shrub 2 m. tall.
- shrub 2 m. tall, lvs. revolute. (bark sample)
- caespitose, scapes erect,
- fls. deep rather dull blue.

Feb. 19 - Headwaters of Quebrada Jipirine,
Cord. Zamora, 10 km. e. of Loja, Prov. Loja.
dense brushy mossy forest below

231 25 Cinchona

26 Cinchona

27 Cinchona

28 Cinchona

29 Cinchona

30 Cinchona

Feb. 19 - main divide of Cordillera
Zamora (El Condor), between
headwaters of Rio San Francisco
and R. Jipirine, 10 km. e. of Loja, P.
open grassy shrubby flat topped

31

32 Manettia

33 Palicourea

34 Manettia

35 Hedyotis

36 Cephacelis

37 Munting granadensis

Feb. 19 - headwaters of n. fork of
Rio ~~San Francisco~~ San Francisco, Cord. Zamora (El

38 Cinchona

brushy ridge

Feb. 19 - Ridge bet. 2 forks of
Rio San Francisco, Cord. Zamora

39 Ladenbergia

brushy ridge

Feb 19 - S. fork Rio San Francisco

40

wooded slope

41 Rondellia

9100'

west of ridge.

gnarled tree 5 m. tall, lvs. glossy (bark sample)

sapling, young sprout with lvs. dull above, older

gnarled tree 4 m. tall, 8 cm. thick, lvs. glossy.

sapling, young sprout with dull leaves, older

sapling 3 m. tall (bark sample)

clump of sprouts, 3-4 m. tall, lvs. glossy.

9250'

Loja - Santiago Zamora

ridge.

bush 1 m. tall, pubescent brown, fls. deep magenta

vine, lvs. pallid beneath.

shrub, fls. white.

vine on ground, fls. white.

forming a mat on ground, fls. purplish white

low shrub, fls. blue

forming a mat on earth bank, fruits greenish

11 km. e. of Loja,

Condor), 11 km. e. of Loja, Prov. Santiago Zamora 9000'

bush 1.5 m. tall, lvs. more or

less glossy, stiff.

(El Condor), 11 km. e. of Loja, Prov. Santiago Zamora

shrub 2 m. tall, lvs. dull-glossy.

Cord. Zamora (El Condor), 12-15 km. e. of Loja, Prov.

vine climbing in trees, lactiferous, fls. whitish.

shrub, fls. rose-red

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Feb. 19 - Rio San Francisco, Valley of the Yuma,

23192 *Cinchona*

wet wooded slope

Feb. 19 - Canillara, ~~near~~ Rio San Francisco

wet wooded slope

43 *Ladslavia magnifolia*

44 *Chusquea*

Pav. Santiago Yuma

16 km. e. of Loja, Pav. Santiago Yuma

clump of sprouts from stumps, 1 m. tall

Valley of Rio Yuma, 18 km. e. of Loja, Pav. San. Yuma

tree 7 m. tall, 6 cm. thick (bark sample)

forming dense tangle, not all in fruit.

Col. Gilberto Rodriguez Feb. 13, 1945
near Monos, 18 km. from Portovelo,

Pav. El Oro 4000'

A *Cinchona pubescens*
tree 13 cm. thick
(bark sample)

B *Cinchona pubescens*
sprout 4 cm. thick
(bark sample)

